THE ENGINEERING AND MINING JOURNAL.

RICHARD P. ROTHWELL, C. E., M. E. } Editors.
ROSSITER W. RAYMOND, Ph. D. }

NOTE.—Communications relative to the editorial management should be addressed to Mr. ROTHWELL. The articles written by Mr. Raymond will be signed with a star.

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THE ENGINEERING AND MINING JOURNAL" ADVOCATES THE ADOPTION OF THE METRIC SYSTEM OF WEIGHTS AND MEASURES,

and urges all who are interested in the simplification of our present complicated and unsatisfactory systems to aid, by their active sympathy and encouragement, the early introduction of this much-needed reform.

AMERICAN INSTITUTE OF MINING ENGINEERS.

OFFICIAL BULLETIN.

The next meeting of the American Institute of Mining Engineers will commence on Tuesday evening, February 27, at 8 o'clock, at the rooms of the American Society of Civil Engineers, No. 4 East Twenty-third street, New York City.

One or more sessions will be held on Wednesday at the Columbia College School of Mines.

Wednesday evening will be devoted to a *Conversazione* at the rooms of the Society of Civil Engineers, in which the members of that Society will take part. An informal discussion will be held on the subject of the advisability and practicability of adopting in this country the metric system of weights and measures.

Further announcements will be made hereafter. Communications relative to the programme of the meeting may be addressed to R. W. RAYMOND, 17 Burling Slip, New York, Chairman of the Local Committee.

JOHN ADAMS BLAKE.

We note, with a regret shared in by all who knew him, the death of Mr. JOHN ADAMS BLAKE, for many years the active member of the Blake Crusher Company of New Haven. Mr. BLAKE'S death occurred suddenly on the 3d instant, in his sixty-eighth year. As an inventor of one of the most important improvements in mining machinery that has appeared in this fruitful age, Mr. BLAKE'S name has become quite familiar to the readers of this Journal, and those who had the pleasure of his acquaintance will deeply regret to hear of the death of one who was held in high esteem for his private virtues as well as his public record. In the management of the business of the firm of BLAKE Brothers, Mr. BLAKE is worthily succeeded by his son, who is a gentleman of high literary and scientific attainments.

THE NEW YORK MINING STOCK EXCHANGE.

This Association, organized in 1864, has been reorganized for the purpose of facilitating dealings in the stocks of the prominent mining companies, and thus meeting the demands of business arising from the increased developments and growing importance of the mining interests of the country. Of its members, 135 are members of the New York Stock Exchange, and 50 are members of the New York Gold Exchange.

The very fact of the reorganization of this board when there is already one in operation, shows at least a faith in the revival of mining as a favorite investment, and we believe the time is not far distant when such will be the case.

We understand that this New York Mining Stock Exchange, under its new management, will exercise every endeavor to prevent certain practices which have scandalized the American Mining Stock Exchange; and should events justify the expectation the high character of many of its officers leads us to entertain, we predict for it a successful future. It certainly has our best wishes, and so far as we can assist it, either in spreading intelligence of the mines whose securities are dealt in, or in affording information which will prevent the facilities the Exchange offers from being used for the floating of "wild-cat" schemes, we shall gladly do so. Honesty and capable management at the mines are scarcely more essential for the success of mining enterprises than uprightness and fairness in the dealings in their securities in the money centers. We shall always advocate these essentials of success, and we welcome the facilities which the new-old Mining Exchange offers for the transaction of a legitimate business.

THE ADOPTION OF THE METRIC SYSTEM.

A very gratifying indication of the progress which the metric-system question is making has just been given in a vote of the members of the American Society of Civil Engineers—a society containing some 440 members, including all the most eminent engineers of this country. In January the following resolution was submitted to the members to be voted on by ballot:

"*Resolved*—That the American Society of Civil Engineers will further, by all legitimate means, the adoption of the metric standards in the office of weights and measures at Washington, as the sole authorized standards of weights and measures in the United States; that the chair appoint a committee of five to report to the society a form of memorial to Congress in furtherance of the object expressed."

The vote was counted on the 7th inst., and was the largest ever made by the Society, viz., 231. Of this number, 138 were in favor and 93 against.

At the approaching meeting of the Institute of Mining Engineers, this same subject will come up for discussion, and we believe a large majority of the members will advocate the "universal system," and, possibly, some combined action by these two influential societies will result from their joint discussion. We trust that as many of the members of the Institute as can possibly do so will be present and take part in the discussion, and those who cannot attend should not fail to send to the Secretary or some member present an expression of their opinion, even if that expression be confined to a mere statement that the writer advocates the adoption of the system. The use of the metric weights and measures is now legal in the United States, as it is in most other civilized countries; and if they were made obligatory in all Government transactions—such as in the customs, the measurement of public lands, etc. (the system is already used in the Coast Survey)—an enormous progress would be made towards their general adoption. If the readers of this Journal—the great majority of whom we believe favor the "Universal Standard"—would make a little personal effort to promote the good cause, they would add greatly to the impetus of the movement and hasten the desired day when we would be relieved from the nightmare of weights and measures with which we are now afflicted, and substitute in their place a simple system uniform with that of other nations.

THE NEW CENTRAL COAL COMPANY OF MARYLAND.

The review of the reports of the directors of this company to its stockholders which we made last week has attracted not a little attention. It must be confessed the company has never stood very high in public estimation, though its list of directors contains the names of many gentlemen well known for their wealth and high standing. There has always been in the public mind a lurking suspicion, founded on something more than mere imagination, that things were not quite as fair and straight as they were represented to be. The previous managerial and reportorial history of some of the gentlemen managing this company are such as naturally to inspire some want of confidence in questions not quite fully explained, and there is, consequently, the greater need for very explicit statements to the stockholders, who of course desire, and have a right to know, the actual value of their property. When this company was organized, and a strong effort was made to float its $5,000,000 stock on the public at *sixty* per cent. of its face (and when that could not be done, at 47 to 48), the statements were that the property represented by the stock was worth even more than $5,000,000. How many of the outside stockholders were then aware that the stock was all issued to the members of the inner circle at *ten;* and that the actual value of the property was, consequently, then estimated at $500,000? The stockholders are naturally desirous of knowing whether as much as $100,000 was paid for the Midlothian and Johnson properties, which were thereupon transferred to the company for $300,000—or presumably for three times their value. They are also anxious to know whether these properties are not now practically exhausted, as far so the big vein is concerned (the lower veins have not as yet been considered of much value in that field); and they would also like to know who received the two hundred thousand dollars, more or less, of their money that was paid over and above the actual value of the property then bought.

The management of the New Central Coal Company states distinctly in its last report to its stockholders that the sinking-fund mortgage bonds authorized in 1873 have not been issued. It might shock and perhaps disgust the stockholders if it were found, in the face of this statement, that a considerable amount of these bonds have been hypothecated as security for the payment of money borrowed to carry on the business of the company. Yet, the President in his report claims that the company has earned each year large net profits. With such startling developments before them, the stockholders naturally desire to know whether the values of the assets are correctly given, and we need hardly say that the matter is worthy their serious attention.

These are the abuses which bring mining enterprises into disrepute, and so long as they are allowed to continue, prudent capitalists will avoid the risks of investment in the securities of such concerns.

NEW PUBLICATIONS.

A CONCISE HISTORY OF THE IRON MANUFACTURE OF THE AMERICAN COLONIES UP TO THE REVOLUTION, AND OF PENNSYLVANIA UNTIL THE PRESENT TIME. By JOHN B. PEARSE, A. M., Metallurgist, Engineer, Commissioner of Geological Survey of Pennsylvania, etc. Philadelphia: 1876.

This little volume is a most important contribution to history, and, since history furnishes the materials for scientific generalizations in social and political

questions, it is valuable as a contribution to science—all the more because it is not expressly an argument. We have plenty of writers who are willing to "discuss"; there are comparatively few who possess the intelligence, the patience and the fidelity to collect facts, and the willingness to carry out such labors. Mr. PEARSE deserves much praise, first for undertaking this work at all, and secondly for the industry and thoroughness with which he has executed it. The book represents a vast amount of labor. By its aid, innumerable orators and essayists will find it easy to be learned hereafter, and to win local laurels which belong of right to the faithful investigator and compiler, whom, it is to be feared, they will often forget to mention.

As the title-page indicates, the account of the ante-Revolutionary industry is complete. Subsequent to the Revolution, the history of the iron-manufacture is traced in Pennsylvania only; but Mr. PEARSE expresses the hope that in the future he may have an opportunity to continue the work until it shall include all the States. We wish indeed (though we are not sanguine enough to expect) that so singularly well-qualified a hand might execute this comprehensive scheme; but meanwhile we are thankful that Mr. PEARSE has recognized the superior value of a smaller piece of work, *well done*. Moreover, the history of the iron-manufacture in Pennsylvania is, as he justly remarks, the record of its technical progress throughout the country. No phase or improvement of it is unrepresented in that State; and its present perfection as a vast organized industry comprising complicated relations of engineering, metallurgy, transportation, trade and finance, has been developed more extensively and fully in Pennsylvania than anywhere else. The blast-furnace process in particular, as distinguished from the primitive bloomery, has been the basis of the Pennsylvania industry. But we cannot do better than to quote, as a conclusion to this brief notice, Mr. PEARSE'S own words (pp. 269, 270 and 271):

"The reputation of Pennsylvania as an iron-producing State, as has been fittingly said, 'has resulted more from the energetic, persevering German use for a century of years of what ores do exist, than from any extraordinary wealth of iron (ores) of which she can boast.' The history of her iron trade has a continuous record of nearly one hundred and fifty years, and the progress made, though slow, has been effectual. Her metallurgy differs from that of all other States in that, from the very beginning, she has scarcely used the bloomery fire, and that her operations have therefore in the earlier periods been on a larger scale, more complicated, but more economical than the operations of her sister States. In the course of time we find, as has been described, the essential improvements of to-day first introduced or originated at her various works, —and we have thus followed the history of *iron manufacture* in the United States as well. We have seen how, partly from natural causes, partly in manufacture, one district after another has lost its hold on the supremacy, or, like Clarion and Venango counties, given up the manufacture altogether.

"The spectacle has a double significance. So far as the individual manufacturer is concerned, his works should be located where they command the most extensive connections and the cheapest fuel and ores of the desired quality. It must be borne in mind that always as phase has succeeded phase—through cold-short iron, then red-short, when quicker rolling enabled such iron to be worked, then "neutral" iron in red-shortness and cold-shortness are both present—the tendency has been to demand stronger metal more and more free from phosphorus. We have never made purely cinder iron in this country; it is to be hoped we never shall, unless it be deprived of phosphorus in some way. So far as the State is concerned, the obvious duty of protection and such encouragement as shall develop its own resources to the utmost is impressed in the plainest signs on every page of our history. Mining, manufacturing, and transportation companies support the State (almost literally in Pennsylvania, as they pay nearly all the State taxes), and should be intelligently governed and encouraged. The early growth of the anthracite iron manufacture was due to legislative encouragement, while the benefit arising from the first State geological survey is incalculable. The usefulness of the second geological survey will be still greater, for our people are now in a position to utilize discoveries and exact knowledge, while they formerly did not know in what direction to develop the resources of the State."

Mr. PEARSE'S active participation in the work of the Geological Survey might well have influenced him to speak more strongly and enthusiastically concerning its value to the State. His moderate statement on the subject is far within the facts as they are known and appreciated by the ironmasters, and we trust by all the citizens, of Pennsylvania. *

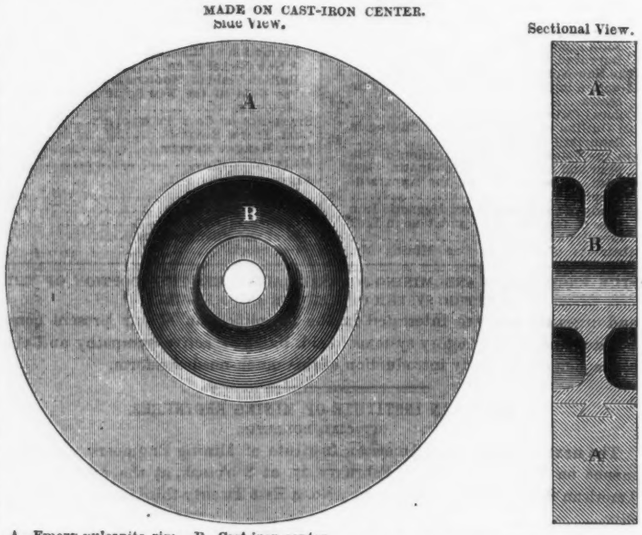
SOLID EMERY VULCANITE WHEELS.

The immense saving in time and labor (equal cost) which has been effected in machine-shops by the use of emery wheels in the place of the hand file and the old style of polishing wheels is so universally recognized that it is not necessary to occupy space demonstrating the utility of these labor-savers. It is now merely a question as to which of the different forms of emery wheels is the most serviceable. The New York Belting and Packing Company (whose card has appeared in our advertising columns every week for a number of years past) claims to have satisfactorily solved this question by its solid emery vulcanite wheels, and the number and character of the testimonials it has received from those using these wheels seems to fully justify the claim. These wheels are a compound of india-rubber and Wellington Mills (London) emery, as little of the india-rubber being used as will hold the particles of emery firmly together. By powerful machinery the two materials are incorporated into one homogeneous mass, which is then rolled into sheets, cut into wheels of the desired size and form, pressed into iron moulds, and vulcanized or cured by being subjected to a high degree of steam heat for several hours. Previous to being vulcanized, the substance is of about the consistency of leather; but when vulcanized, it becomes nearly as hard as cast-iron, and of the nature of stone throughout; hence the wheels can, like a grindstone, be used until the size is so worn down as to be insufficient.

The properties of these wheels are such that they can be used with great advantage and economy for cutting, grinding, and finishing wrought and cast iron, chilled iron, hardened steel, slate, marble, glass, etc. They can be used either wet or dry; but by allowing water to drip on them while in use, their cutting properties will in some cases be improved, and all dust and offensive odor from them prevented.

The accompanying figures show one form of these wheels; they are also made solid without iron center:

SOLID EMERY VULCANITE WHEEL
MADE ON CAST-IRON CENTER.



A—Emery vulcanite rim. B—Cast-iron center.
N.B.—The ends of the hub must be flush with the sides of the wheel, as drawn, and not project beyond.

Wheels made in this way should be kept in place on the shaft or mandrel by a fixed collar on one side of the hub, and a loose collar and nut on the other side; and prevented from turning on the mandrel by a spline. Wheels should never be keyed on to a shaft or mandrel, as this is liable to throw the wheel out of true, and is objectionable in other respects, and sometimes dangerous.

It is indispensable to the successful working of the wheels that they should run perfectly true, and to this end they must be properly mounted. In placing the wheel on the shaft or mandrel, it will perhaps be found in some cases that it does not run true on the face, owing to the hole not being perfectly central. To remedy this, enlarge the hole on the full side with a hot iron, and paste successive layers of paper on the opposite side of the hole, until made central and the wheel runs true. Should the wheel run "out of true" on the side, it may be remedied by interlaying pieces of paper between the full part of the wheel and the fixed flange on the mandrel. It will be found a good plan to paste a thick sheet of paper or thin rubber packing on each side of the wheel where the flanges come in contact with it.

In order to produce the best results, the wheels must be driven with great velocity. Our experience is that from 5,000 to 5,500 feet per minute is an effective and safe speed to run them.

Solid emery vulcanite wheels can be turned off in a lathe running at a very slow speed, a bar of red-hot iron or small pan of lighted charcoal being first placed just under the wheel—to soften the surface as it revolves—when it can be easily cut by a common turning-tool. Care should be taken that no greater heat is applied than is necessary to soften the surface so that the tool will cut it, as excessive heat will injure the wheel.

The simplest and best method of turning off these wheels is by the use of the diamond turning-tool, which fits in the tool-stock of an ordinary lathe.

Solid emery vulcanite wheels are made of all sizes from 1½ inches diameter ¼ inch wide, and which cost 30 cents, up to those 36 inches diameter 4 inches face, costing $250.; [Larger sizes than those are made to order.

IMPROVED COAL PROPERTY FOR SALE.

On another page will be found an advertisement under this head of the Bruce Coal Company's property in Illinois. We understand the property is very valuable and presents an excellent opportunity for a remunerative enterprise. It is offered on very favorable terms, and is in full running order. The Chicago market takes about 1,600,000 tons of coal a year, and as this Wilmington coal is favorably known in that market and is situated but 60 miles from it, there would seem to be a fine opportunity for the development of a very large business. We commend the matter to parties desiring an investment of this character as one deserving their attention.

IRON HUTS.—Orders have been given by the Russian Government to the manager of the Imperial Iron Foundry at Tula, to construct, without delay, 40,000 iron huts for the accomodation of troops.

THE NEW NOMENCLATURE IN GERMANY.

We are indebted to the courtesy of James M. Swank, Esq., Secretary of the American Iron and Steel Association, for the followiug copy of a letter from Dr. Hermann Wedding of Berlin, on the new nomenclature in Germany:

BERLIN, Germany, January 5, 1877.

To the Secretary of the American Iron and Steel Association:

SIR:—Every system has its defects; hence every nomenclature also. The settlement of a system can therefore only be founded upon a compromise, and a system so made is the better the more its nomenclature covers the principal abstracts, and leaves the uncertainties to the lowest divisions. That was my opinion as I put my name under the International Committee's report.

Our ancestors made by the ways of the direct process, or of the charcoal finery, two kinds of forgeable iron, which always differed essentially in the amount of carbon, had, in consequence, essentially different physical properties, and were used for essentially different purposes. The intermediate kinds of iron were not in use, and were therefore not purposely produced. The puddling process originated at first an intermediate product, the so-called "fine-grained iron."

All these products were obtained in a pasty state. Now comes the Bessemer process and produces a fluid, forgeable metal, and several adjoining processes do the same. Fluid irons are now easily made of different amounts of carbon, and every intermediate product is blown without difficulty. From this time the property of hardening no more stands in the foreground; it goes back, and the properties which are a consequence of the fluid state take the leading place. At the same time arises the necessity of a new nomenclature.

The nomenclature of the International Committee is known. Let me show the system:

Iron.
- Forgeable; difficult to melt: Forgeable iron. I.
  - Obtained in a fluid state: A. Ingot iron.
    - Hardening: 1. Ingot steel.
    - Not hardening: 2. Ingot iron.
  - Obtained in a non-fluid state: B. Weld iron.
    - Hardening: 3. Weld steel.
    - Not hardening: 4. Weld iron.
- Not forgeable; easy to melt: Pig iron. II.
  - With amorphic carbon only: C. White pig.
  - With graphite: D. Gray pig.

There may be added, called as before: *Remelted* pig iron—cast iron; *remelted* steel of every description—cast steel. Here the division following the fluid or non-fluid state keeps the principal place; the hardening only the second. Therefore, all the members of the committee, differing in some points (Mr. Akerman and myself wishing a more detailed subdivision), agreed to this compromise without hesitation.

It is asserted that such a compromise, comprising the languages of the principal iron-producing peoples, has not been necessary, and that each country may keep its own expressions without caring about others. But how can that be good and useful? I think every one, Protectionist or Free Trader, must be a friend of clear and distinct definitions, whether in treaties of commerce or in simple tariffs. And even besides this international question, is it not necessary for the public trade to have accurate definitions for every kind of ware, giving no room for intentional or unintentional deceptions?

By the new nomenclature accepted and introduced, every tradesman and every customs-officer who knows nothing about iron metallurgy easily distinguish: I and II by the forgeability; C and D by the color; A and B by the fracture—if necessary, by an easily made etching with acid; 1, 2, 3, and 4 by the hardening. Also, those ought to be satisfied who desire to examine the chemical properties, viz.:

Iron.
- I. contains O 2, 3°° C.
  - 2 and 4; O-0, 6°° C.
  - 1 and 3; O, 6-2, 3°° C.
- II. contains 2, 3-5°° C.
  - Amorphic C.
  - Graphitic and amorphic.

But it is not necessary to make analyses and to dwell upon differences growing from the presence of other matters, which would be the case if you classify according to the amount of carbon.

After having read all that has appeared in your *Bulletin* and THE ENGINEERING AND MINING JOURNAL, I have no hope that our nomenclature will be accepted in America. But let me tell you, we are happier! It may be the interior value of the nomenclature, or it may be the authority of the names of the international committee, that has accomplished the result; but what long discussion could not do is done! The nomenclature *is* accepted in Germany.

The professors of iron metallurgy in Germany, Austria and Hungary have accepted it; the most widely circulated journal of mining and metallurgy and the official journal of the ministry of trade and commerce have accepted it; the Association for the Progress of Industry at Berlin and the Association of Miners and Smelters at Karntnen have accepted it. It will be introduced very probably in all official statistics. So we are certain that at least our rising generation will unanimously use the nomenclature proposed by the international committee.

Well, you Americans will of course do what you think best, but please accept our German thanks, added to many thanks for the kind and amiable reception given us in your wonderful country, that you again have been the best help to a uniform nomenclature of iron in Germany.

Very truly, Dr. HERMANN WEDDING.

REACTIONS IN THE BESSEMER AND MARTIN PROCESSES.

TO THE EDITOR: SIR—I have just seen the JOURNAL of December 16, in which you refer to my parallel between the Bessemer and Martin reactions, in my letter to Mr. Hewitt about customs duties, as follows: "Mr. Holley's reference to the identity of the chemical reactions in the Martin and Bessemer processes may perhaps be misunderstood. Both processes decarbonize cast iron, and the union of the carbon of the cast iron with oxygen is the chemical reaction involved. The source of the oxygen is, in the Bessemer converter, atmospheric air exclusively,; in the open-hearth it is partly atmospheric air (while an oxidizing flame is acting), and partly iron oxide."

I should perhaps have explained more fully, unless iron oxide is introduced into the Martin steel charge, as in case of the pig and ore processes, atmospheric air is the *source* of the oxygen in this process, to the same degree that it is in the Bessemer process. In the former the oxide of iron formed by atmosphere and iron, itself becomes an oxidizing agent. But is this not true in the latter process also? Does the oxide of iron formed in the Bessemer vessel remain unchanged in presence of carbon, when under the same conditions in the Martin furnace and in the puddling furnace, oxide of iron is known to oxidize carbon? I think the best authorities agree that all the oxidation in the Bessemer process is not performed directly by the atmosphere. Again, the pig-and-ore process is not peculiar to the Martin system; it has to a certain degree been employed in the Bessemer system, by putting ore in the converter. Finally, the union of oxygen and carbon is not alone the reaction involved in either process; the oxidation of silicon is of equal importance.

LE CREUSOT, France, Jan. 21, 1877. A. L. HOLLEY.

COLORADO MINES.

GILPIN COUNTY—WHAT WAS DONE IN 1876—THE GUNNELL AND KANSAS—THEIR YIELD, EXPENSES AND PROFITS—THE BURROUGHS, KENT COUNTY, ILLINOIS, AND OTHER MINES.

CENTRAL, Col., January 31, 1877.

More mining was done and more gold obtained in the mines of Gilpin County in 1876 than during any previous year. The facts and figures given in this article relate to mines at the upper or western end of this gold district. This section embraces many lodes that have been famous and productive—some of them in former years, and some both then and now. Here are the Gunnell, Kansas, Burroughs, Illinois, Kent County, Alps, Eureka, Sudeberg, Prize, Gardner, Roderick Dhu, California, Forks and Flock. The last four have been idle throughout the year, and the preceding three nearly so; but all are likely to be operated extensively within the coming twelve months. The Illinois is being developed preparatory to more extensive operations. There are many other good mines that have produced well, such as the Ute, Hubert, Saint Louis, Lewis and others, and a multitude of lodes or spurs mined on a smaller scale. The Gunnell and Kansas have surpassed all others in the amount of bullion.

The Gunnell, as far as opened or claimed, has an extent of about one mile, beginning in the heart of Central and continuing west over and through Gunnell Hill. The eastern portion is controlled by John Scudder. Then come several company properties and fragmentary claims. One of these yielded $20,000 in 1876, and some of the others smaller amounts. Further west is what was formerly the Gunnell Gold Company's claim, 485 feet. This was worked under lease by Fullerton, Kimber & Co., from January, 1874, until the fall of 1876. In September of that year the shaft-house was burned, with hoisting works, etc. The lessees then purchased the property for $50,000, and erected a large stone building and hoisting works, in place of those destroyed by fire. The shaft is 700 feet deep. Nearly all of the ore came from the territory west of this property. The adjoining claim west is called the Little Gunnell, comprising 200 feet, and is owned or controlled by one or all of the same firm. West of this is the Grand Army, comprising 800 feet, with as much more territory west owned or mined by James C. Fagan. Shafts and levels driven last year on this property, and levels from the "Gunnell Gold" shaft have revealed the largest and most extended body of very rich gold ore found in Colorado for many years. It is from four to eleven feet wide, and returns an average yield under stamps of nearly $150 per cord, or $20 per ton. The selected ore sold to the smelting works yields from $100 to $200 per ton. A contest between the Grand Army and Gunnell Gold parties prevented as large a yield at certain periods as could otherwise have been obtained. These difficulties have recently been adjusted. A heavy snow in May caused an immense amount of water to settle in the mine. Since the fire of September the water has never been entirely removed, but undoubtedly will be soon. These occurrences lessened the yield for the last eight months of the year considerably. The Grand Army began to yield near the close of the year. These combined properties are likely to produce half a million during the coming year, with from one-third to one-half of that sum in net profits. The Grand Army shaft is 500 feet deep, with steam hoisting works put up during the past season. The firm operating the Gunnell Gold and adjoining property obtained $127,729.56 in 1875, with $40,000 above all expenses. The yield, expense and profits by months in 1876 is reported as follows:

1876.	Yield.	Expense.	Profits.
January	$12,463 28	$7,853 28	$4,610 00
February	16,740 00	9,180 00	7,560 00
March	25,695 00	10,199 00	15,496 00
April	24,732 00	10,121 00	14,611 00
May	14,000 00	10,000 00	4,000 00
June	13,571 12	10,640 25	2,9 0 87
July	14,397 00	10,697 21	3,699 79
August	14,194 24	9,987 40	4,206 84
September	.....	5,916 24	.....
October	10,908 71	7,999 47	2,9c9 24
November	15,400 36	8,264 78	7,135 58
December	14,620 35	9,711 74	4,908 61
	$176,722 06	$110,579,37	$72,067 93
Loss in September	.....	.....	5,916 24
Total net profit of the year	.....	.....	$66,151 69

The yield of January will probably far exceed that of most preceding months, as 16 cords (or over 100 tons) of ore are said to have been raised on some days. Three mills are employed in Back Hawk on this ore. With a stamp mill over the mine, and run by water power, which could be done in case the Consolidated ditch was improved and piped, the expenses would be much smaller and the profits correspondingly larger. Previous to 1874-5 these mines had been idle for years, several operators having failed to make them pay. The present ore supply, over 1,000 feet long, cannot be exhausted in several years. The yield of the Gunnell for 1876 was about as follows:

Fullerton, Kimber & Co.	$176,722 06
Other parts of the lode	40,000 00
Difference between amount received and exact value of smelting ore, estimated	15,000 00
	$231,722 06

In four months of last year the Hubert produced about $14,000, with $3,500 profit. Some parts of this vein carry from 30 to 65 per cent. of lead, and from 18 to 50 ounces of silver, and a small amount of gold. This class of ore is sold to the smelting works.

The Ute Lode is on Quartz Hill, below the Kansas. It has been developed from the surface within fourteen months, and has yielded over $40,000 in that time. The vein has been from one to six feet wide. One thousand tons of ore milled yielded at the rate of $38 per ton.

TO BE CONTINUED.

AN OUTLINE OF ANTHRACITE COAL MINING IN SCHUYLKILL COUNTY, PA.*

By J. Price Wetherill, Tremont, Pa.

(*Concluded from Page 73.*)

Another plan that has been successfully used, is to leave, at stated distances, barrier-pillars of sufficient thickness to sustain the top, and prevent a crush extending beyond them, working out the coal between as the gangways progress, but leaving in the gangway stumps. As the plan is not yet in general use, I cannot give the exact distances of section and barrier-pillar best adjusted to economical working and stability; the usual irregularity in size and condition of the seam also enter largely into the question (places where it is thin, or of poorer quality, are selected for barrier-pillars), as do also the character and ordinary behavior of the top. In the future, as the amount of exhausted territory above the ground in process of mining increases, it is probable that our system of working will require to be modified to meet the requirements of the case.

Gangways are driven as far as economical working will allow, or until some natural boundary, such as an anticlinal or synclinal axis, where the seam is in fault, is reached, or a fault too large to drive through profitably. The limit to which a gangway may be driven will depend more upon the condition and size of the seam, and the character of its upper w than upon the mere distance to move the coal. In other words, the cost of keeping open a gangway will limit the distance to which it may be driven, natural boundaries excluded. Where seams are thin, and contain strong coal to keep gangway stumps intact, with good slate or rock top, the cost of repairs necessary to keep gangways open will not be large, and they may be driven for two, or even three miles profitably. But in large seams, even under the most favorable circumstances, one to one and a half miles will be all that can be maintained with advantage, and where the conditions are unfavorable, half a mile will be ample. Since the coal lands have become the property of large and wealthy companies, much of the evil that necessarily arises from property restrictions on the natural location and extent of collieries has been done away with, and improvements are now perpetuated by giving them all the coal within their natural scope, irrespective of property limits. The tendency therefore is to diminish the number of collieries hitherto in operation, and increase the capacity of those advantageously located; and greater lengths of gangways, improved methods of keeping them open, and increased facilities for mining coal to greater distances, are among the requirements of the future.

It sometimes happens that it is desired to locate the lower terminus of the outlet at such a level as will give two or more lifts above it, or the dip of the seam may become so much flatter as, in the same vertical height, to give much greater length of breast on the dip. Assuming the dip at the outlet to be 60°, and that in one of the gangways it flattens to 30°, the length of lift which was 100 yards at 60° will be obviously very much increased beyond the distance that can be profitably worked from the gangway. Under these circumstances it is customary to lay tracks in one of the breasts after it is finished, and convert it into an inclined plane which is operated by gravity, the loaded wagon hoisting the empty one,—all the machinery consisting of a drum, on and off which the ropes are wound, and a brake to regulate the speed. Gangways are driven from the top of the plane, similar to those described above, and the same course of mining is pursued. The steepest inclination I have known a gravity plane operated on is 37½° (although with competent brake there is no reason why this should not be increased), and the slightest is 5°.

In cases where the pitch is too steep for a plane, or where the expense of one is not desired, the coal from the upper gangway is dumped into an empty breast and loaded therefrom into wagons on the gangway below. Such a breast is called a "counter-shute," and the upper gangway a "counter-gangway." As there is no provision in the counter-shute plan for getting the timbers necessary up from the lower gangway, they are sometimes put off the wagons on

Fig. 13.

Scale 300—1″

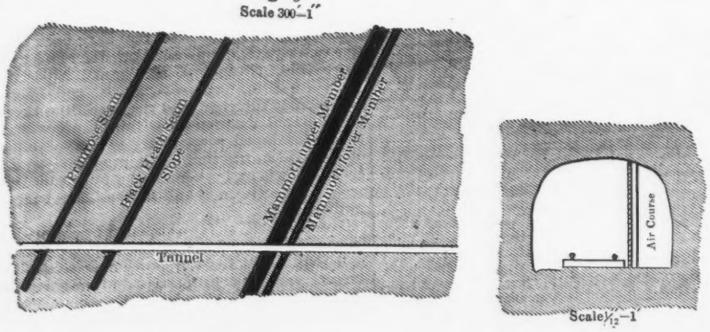
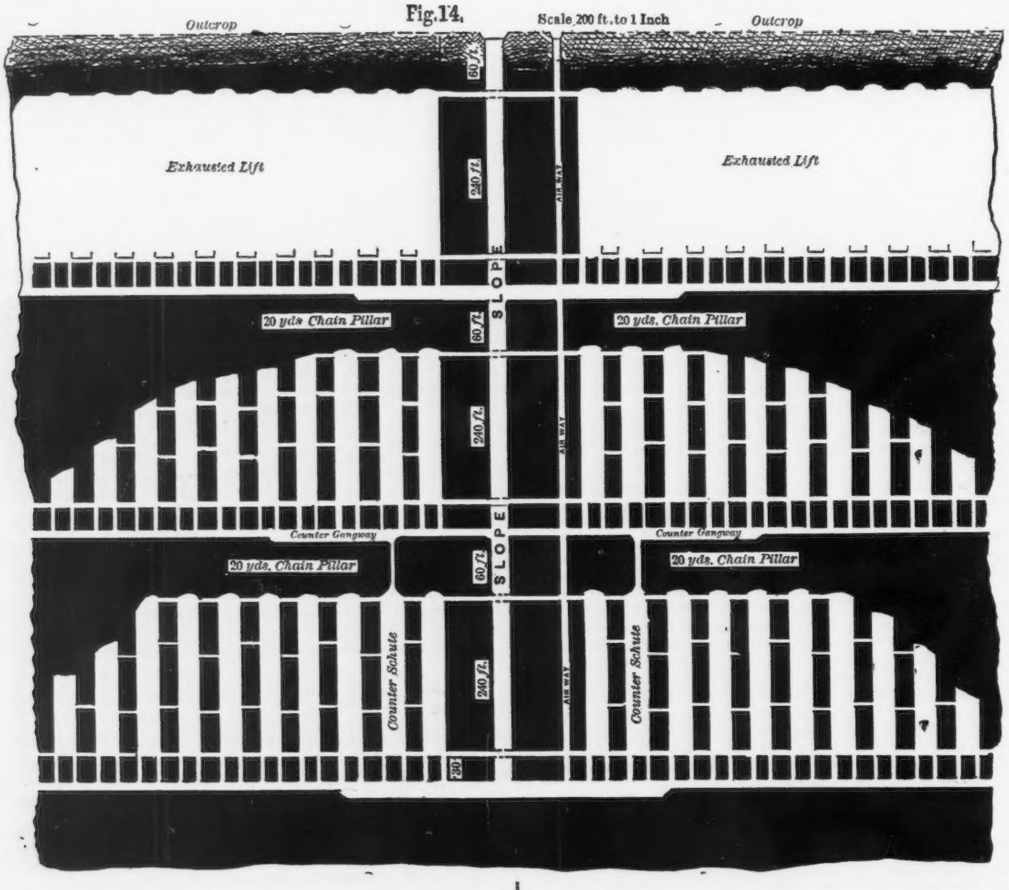


Fig. 14.

Scale 200 ft. to 1 Inch



* A paper read before the American Institute of Mining Engineers, at the Philadelphia meeting, October, 1876.

the outlet (if a slope) at that level, and if this cannot be done must be either lowered from the surface or hoisted from the bottom level by hand. Where the dip is not so steep that it will take harm from the speed at which it travels, it may be allowed to slide down an air-way or some suitable opening; or if the dip is too steep, a small plane with 2½ to 3 feet gauge may be laid in the opening, and the timber lowered by gravity on trucks made for the purpose. Where neither of these appliances are used, the timber and rails must be either hoisted by hand with a windlass, or carried by men up to the counter-gangways, and the wagons also must be taken to pieces and carried up, all of which adds to the cost of the counter coal, besides the unavoidable waste there is from the tendency to grind into dust in the passage from one gangway to the other in the shute. The latter evil is in part obviated by keeping the shute constantly full, so that the velocity and consequent loss of the moving mass is reduced to a minimum.

It will be observed that in the system of mining pursued with us, the direction of the "cleat" does not influence the course in which the breasts are driven—as it does in bituminous coal mining; and the reason is that our steep angles of inclination do not admit of any variation of the rule laid down above in working breasts, within any practicable limit of economy. Furthermore, as anthracite is so hard as to require the use of powder, in almost every case the benefit derived from the cleat is not as great as in softer coals requiring little, if any, blasting. However, our miners always take what advantage they can in locating and charging their shots with reference to it.

When the gangways have been robbed back to within as close a distance to the outlet as is deemed safe for its stability, the work is finished at that level, and the gangways need not be kept open unless they are to be used as water or air courses. It is always desirable to keep the water produced at each level at that level, and not permit it to go lower, making thereby less work for the pumping apparatus to do; and it is therefore generally necessary to keep old gangways open as water-courses, where possible. I have myself considerable doubts as to whether in thick seams the amount of coal lost in the endeavor to keep up water at different levels, which is not generally successful for more than a very few years, is not an unnecessary and extravagant waste at all levels except the water level.

After the one or two lifts (as the case may be) that have been developed by the outlet are exhausted, it is continued to another lift, or more, as may be desired, when the same course of mining is pursued.

Fig. 14 is a plan on the plane of a seam, and shows the method pursued in sinking the outlet (assumed to be a slope) for new developments, with regard to the amount of coal left to sustain the old level and the ground taken from the new.

Very generally over and under lying seams are developed and worked by tunneling from the seam on which the outlet is located.

The dimensions of the tunnel are usually 7 feet high, clear of the rail, and 10 feet wide, which will admit of a brattice and air-course while under construction, and afterwards if necessary, and competent drain for the water. (See Fig. 13.) Unless the distances are unusually great, these tunnels are driven by hand, as air-compressing machinery necessary to drive rock-drills is not generally used at the collieries for other purposes, and the expense of putting it up for tunneling alone would so much increase the cost of the work as to overbalance the advantage in time saved.

When we consider that the loss under this system of mining is not less than 30 per cent. of the amount of coal in the seam, and in many cases exceeds 50 per cent., it is evident that it is still very far from perfect. What developments of science may in the future be utilized to reduce this loss, we do not know, but as it is chiefly due to the great thickness and steep pitches of the seams, I expect that the difficulty will be overcome as successfully as many others have been. It must further be borne in mind that the mining of anthracite coal in this country, under the direction of educated men, is as yet in its infancy, and the abundance of the article has restricted their improvements within well-defined limits as to cost.

I have not entered upon the subject of ventilation, as it would lead into greater lengths than I had contemplated in this sketch, and the system does not differ from that pursued in other mining enterprises, save only in its complicity.

ON THE VOLUMETRIC DETERMINATION OF SULPHUR AND AMMONIA IN ILLUMINATING GAS, WITH A DESCRIPTION OF THE APPARATUS EMPLOYED.*

By H. E. Sadler and B. Silliman, of New Haven, Conn.

(*Concluded from Page 76.*)

OTHER PRODUCTS OF THE COMBUSTION.

Aside from the acids and bases, no substance among the products of combustion was positively identified. Potassium iodide paper, moistened with starch liquor, and suspended above the marbles, as in the condensing tube, immediately showed the presence of an oxidant, probably hydrogen dioxide or ozone, since nitrous acid was hardly possible after passing this alkaline solution. Blue litmus paper, however, was here reddened, but rapidly bleached. The reddening was probably due to the carbon dioxide.

A portion of the drip from each of the last eight experiments was preserved in tightly-stoppered bottles, and at the conclusion of the experiments tested for oxidants with one-twentieth normal sodic hyposulphite and iodine solutions. No oxidation of hyposulphite took place in alkaline solution. Upon acidifying with hydrochloric acid, from one to two c.cms. were found to be oxidized. After adding excess of hyposulphite, and allowing the solutions to stand—Nos. 12, 13 and 14 over night, and the rest for one hour,—the following results were obtained. Since no oxidation took place in the alkaline solution, it was inferred that nitrous acid was the oxidant, and not hydrogen dioxide nor ozone, and the results are accordingly expressed in grains of nitrogen oxidized in the combustion of 100 feet of gas:

TABLE H.

	Grains N.					
No. 12	0·988	equal in saturating power to			0·86	grains of sulphur.
" 13	0·739	"	"	"	0·65	" "
" 14	0·706	"	"	"	0·62	" "
" 15	0·415	"	"	"	0·36	" "
" 16	0·411	"	"	"	0·36	" "
" 17	0·354	"	"	"	0·31	" "
" 18	0·292	"	"	"	0·26	" "
" 19	0·244	"	"	"	0·21	" "

These results seem to indicate so unquestionably that much the greater part of the oxidation was due to the atmospheric air absorbed by the liquid, that it is barely worth while to recall in this connection the Nessler determination of the ammonia in No. 12, 9-10th grain per 100 feet, equal in saturating power to 0·84 grain of sulphur. The above table shows nitrous acid in No. 12 equal to 0·86 grain of sulphur.

FURTHER SUGGESTIONS.

The possibility of avoiding the complication arising from the arrest of varying quanties of nitrogen acids, and of further simplifying the working of the test by substituting pure water for standard alkali in the condensing tube, is suggested by a consideration of the fact that sulphuric oxide possesses so great affinity for water, and that, when once in solution, especially if the proportion of water is large, only slight traces of acid vapors are given off, even under the most favoring circumstances.

It may be true that, in the combustion of sulphur, sulphurous and not sulphuric oxide is the body immediately produced; but it is rendered probable by several experiments, most of which have been detailed above, that traveling in company with the powerful oxidants produced by the combustion of hydrocarbons in air, no considerable quantity of sulphur would enter the combustion tube without being completely oxidized—a view which receives confirmation from the important experiments of M. Vèrigo, communicated to the *Académie des Sciences* by Berthelôt, and reported in *Comptes Rendus* for April 24, 1876.* If this inference prove unfounded, we have still a safeguard in the comparatively ready solubility of sulphurous oxide in water with which the products of combustion are very thoroughly scrubbed in the condensing tube; and, as a last resource, the addition to the scrubbing water of a small quantity of standard solution of borax, which is a great solvent for sulphurous oxide.

While still under the impression that sulphurous acid was the chief substance to be met with, some experiments which depended for success upon the power of water to arrest sulphuric oxide, as suggested above, gave the following results:

TABLE I.

No. 1	14·93	grains S. per	100	feet.
" 2	31·52	" "	100	"
" 3	17·51	" "	100	"
" 4	10·51	" "	100	"
" 5	10·48	" "	100	"
" 6	18·60	" "	100	"
" 7	18·43	" "	100	"
" 7 Letheby	15·34	" "	100	"

The products of combustion were bubbled through water, and bromine added continuously by an automatic arrangement to oxidize the sulphurous acid. The exhauster, a Richards pump, used to draw the gases through the water was insufficient in capacity and uncertain in its action, and, accordingly, only a small quantity of gas, from two-tenths to four-tenths of a foot, could be burned for each determination. A volumetric estimation of the sulphuric acid was then obtained by expelling the free bromine with heat and the hydrobromic acid by digestion with silver oxide, or better with silver carbonate. When this had settled, an aliquot portion of the supernatant liquid was withdrawn for titration, but as it was found to contain dissolved silver salts sufficient to obscure the reaction between hæmatoxylin or cochineal and an alkali, these were removed by precipitation with hydrogen sulphide, the excess of which was in turn expelled by boiling. The remaining free acid was titrated with standard alkali. In dealing with such small quantities the probable error was of course very large, and it was thought useless to make comparative experiments with the Letheby test until the apparatus should be put in condition to burn a larger quantity of gas for each determination. Before so amending, the whole process was abandoned in favor of the alkali test, and we have accordingly but one comparative experiment, No. 7. The general results afford some indication, however, of what might, under more favorable conditions, be accomplished with water as a scrubbing liquor.

RESUMÉ.

In reviewing what has been accomplished, an advance in two directions seems possible:

First—An apparatus has been devised for bringing gases into contact with a liquid, which is an improvement on bubbling them through the liquid contained in a Woulfe bottle in three respects. The necessity for an exhauster or blower is avoided, the gas is completely broken up, affording a more intimate contact, and the proportion of the two may be so regulated as not to flood the products.

Second—The gas engineer is provided in this apparatus with a complete indicator of the working of all his purifying processes except the removal of the tar.

It is continuous. There is no instant of the day or night when the quantity of ammonia and sulphur passing into the holders or street mains is not being accurately measured.

It is ever ready, and if the condensers and scrubbers allow an abnormal quantity of ammonia to pass, or the purifying boxes become overworked, and there escapes traces of hydrogen sulphide, which every engineer now intends to remove, the test papers give immediate notice, and the amount of damage done can be quickly determined.

It is complete. The presence and quantity of ammonia, and of hydrogen sul-

* A paper read before the American Institute of Mining Engineers at the Philadelphia meeting, October, 1876.

* Since this paper was read, our attention has been called to the fact that Chas. Heisch, F.C.S., had already observed the absence of sulphurous acid (London Journal of Gas-Lighting, &c., Dec. 29th, 1874, p. 856), and in a January (1877) number of the American Chemist are reported some experiments of W. C. Young, F.C.S., leading to the same conclusion.—AUTHORS.

phide and the other sulphur compounds are indicated, and the possible presence of carbon dioxide; for on account of the well known power of that body to decompose moist calcium sulphide, setting hydrogen sulphide free, no noticeable quantity of carbon dioxide can pass the purifiers without the previous escape of hydrogen sulphide.

It is rapid. Ten minutes is ample time to determine both the ammonia and sulphur.

It is inexpensive. Fifteen dollars will provide all the glassware for the apparatus. The breakage is small, and the chemicals cost comparatively nothing.

Finally, it is simple in theory and practice. To work it successfully requires no knowledge of chemical theories, and the needful manipulations can be easily acquired by a little care and attention to a few simple directions.

H. E. SADLER.
B. SILLIMAN.

DISCUSSION.

MR. BIRKINBINE.—I would like to ask Mr. Sadler how often it is the practice to determine the sulphur and ammonia in the gas-works, and also whether the determinations are made at or about the time of charging, or about the time the charges are used up.

MR. SADLER.—Your question is, how often observations upon the sulphur and ammonia are made in gas works?

MR. BIRKINBINE.—Yes, sir; but I am speaking now particularly in regard to this apparatus. Are observations made once in twenty-four hours, or are they made at every charge?

MR. SADLER.—Either once in twenty-four hours, or as is found to be most convenient. If there is any reason for making observations once in every charge, it may well be done.

MR. BIRKINBINE.—I think, Mr. President, that the gentlemen have given us by this process a more accurate determination of the exact quantity of sulphur and ammonia in gas than by any other mode which we have yet used.

I would like to ask Mr. Sadler if he has made any series of experiments covering the operation of the works—that is, while the works were in their normal acting condition; if his connection with the works has been such that he has been able to keep any record which will enable him to give us information in regard to the character of the gas from day to day?

MR. SADLER.—As far as my experiments have gone (and there have been in all, I think, considerably more than a hundred of them), the daily variations have not often been large. However, a variation of ten grains in a day—from thirty to twenty—is not unknown, and in the determinations which are reported by the referees, and the accuracy of which our experiments have given me no reason to suspect, the variations are very much greater. A variation of 50 to 75 per cent. is not unknown.

PROF. SILLIMAN.—The variation of ammonia is considerably greater than that of the sulphur. During the course of these observations it was more than once, I may say frequently, asserted by the engineer in charge that he was sending out no ammonia; that the gas went from the works free of ammonia. But there was no time when the gas did not immediately discolor litmus paper. This discrepancy was due beyond doubt to an insufficiency in the means of observation employed.

A STUDY OF THE SPECULAR AND MAGNETIC IRON ORES OF THE NEW RED SANDSTONE IN YORK COUNTY, PA.*

By Prof. Persifor Frazer, Jr., Philadelphia.

[WITH SUPPLEMENT.]

In his "Final Report," vol. ii., part second, p. 763, Prof. Rogers sums up the metalliferous veins of the mesozoic sandstone by remarking that these are not associated with dykes or trap-rock, but are independent metalliferous injections. But in enumerating the different kinds of ores, singularly enough no mention is made of the iron ores which are now under consideration, although some of those in the vicinity of Dillsburg have been wrought for a very long period. The ores of Cornwall and of the Jones Mine are referred to the older formations, but these are of an apparently different character. The Dillsburg ores are all more or less soft lumps of specular and micaceous ore carried in clay. Their general appearance is dark, dirty green, with streaks of black and glistening pulverulent ore. They are very irregularly deposited, but almost or quite without exception are found between the plates of rock which make up this portion of the mesozoic sandstone. An ideal section north from the Grove mine will reveal this. The region is very much covered with disintegrated rocks, as clay or sand, and very few surface exposures are to be found in the neighborhood of Dillsburg. The rocks which have best resisted the weather have been the traps, and, as a general rule in this region, their dip corresponds to that of the beds between which they were poured out. Next to the trap (and sometimes even before it), in capacity to resist the disintegrating action of the water and atmosphere, comes the altered and indurated mud rocks and argillaceous sandstones which frequently form the foot or hanging wall (or both) of these veins. Commencing our line at the Grove slope, and getting the dips in the manner above indicated, and also from the angle of the slope itself—an equally good plan, since the miner is pretty sure to keep on the dip of the bed—it is N. 10° E., 24°.

For about 2,200 feet north no mines are observable, when there occurs on the projection the Bell slope, in which the hanging and foot walls dip about N. 10° E., 20°.

Supposing these two mines to be in two different veins of ore, and to be continuous, their horizons in the measures would be at a (perpendicular) distance of 750 feet apart.

Again, for 1,400 feet northwards no ore mine is projected, and at a little over this distance occurs the old excavation (the first in this vicinity to be exploited), in which Mr. Underwood has recently sunk a new shaft.

There is an excavation between this and Bell's slope, but no accurate information in regard to it was obtained. The pit is about 15 feet deep, and the shaft is sunk from its lowest point for 25 feet, when a body of ore is said to have been struck. If so, and the dip of the rocks is here similar to that in the slope, the outcrop of the vein ought to be seen crossing the neck of the narrow southern prolongation of the pit about 80 feet south.

About 150 feet further north on the line occurs the projection of the ore in Underwood's slope (which is probably the same bed as that struck in Logan's shaft). The enclosing rocks and the slope dip about 28° due north, and the latter extends 290 feet below day, and proves the ore for that distance. 500 feet a little east of north of the mouth of Underwood's slope, on ground 30 feet below it, the Logan shaft has been sunk, which reached the ore at 50 feet, from which point a slope was begun and extended downwards at an angle of 28° (conforming to the dip of the measures), 80 feet.

Projecting this vein upwards, it is found to intersect the surface on the same horizontal plane with the mouth of Underwood's slope, at a point 170 feet south of the mouth of the shaft. Connecting this point with the point of outcrop of the Underwood vein by a supposititious outcrop line, it is found to run east, 80° south, and the direction of dip of the vein to which it corresponds is north, 8° east.

The coincidence of this direction with that of the Grove and Bell banks (N. 10° E.) is too striking to be overlooked, and leads to the conclusion that the bedding of the rocks between these points is comparatively regular, and the strata for half a mile south of the Underwood-Logan are undisturbed by faults. 160 feet northeast of the Underwood slope is an excavation 140 feet in length northeast, and about 35 feet broad in its broadest part.

The Wrightsville Company is said to have wrought this bank to a very considerable depth, and to have had 18 feet of ore in the bottom of it. It was not satisfactorily ascertained at what depth this ore occurred, and the settlement of this doubt has an important bearing on the question of the number of the ore veins here represented;—100 feet north of this latter opening (now a pond) is the southern margin of a very large excavation, 100 feet long, and 125 feet north and south.

Near the southeastern corner of this pond, and high upon the bank, is the site of the former mouth of a slope. A little west of north of it, and in the northwestern angle, is the place of a former bore-hole (No. 5), the record of which has been already given, and 50 feet north of this bore-hole is a stake said to have been vertically over the end of the slope. This stake bears north 3° 30′ west of the mouth of the slope, and if these data may be depended upon, indicates an alteration in the direction of the dip from that observed at the Grove and Bell slopes of 11° 30′ to the westward. 125 feet northwest of bore-hole No. 5 are two openings; the first an open cut long since abandoned, and a little southwest of it the mouth of a slope which was said to have been formerly driven 148 feet, at an angle of 18°, and to have been left in 4 feet of ore at a vertical depth beneath the surface of 60 feet.

(If the 18°-slope was maintained, the vertical depth of the bottom of the slope would be 48 feet.)

This ore, if carried down at the same angle of 18°, would coincide closely with the bed of ore said to have been struck in bore-hole No. 4, at a depth of 74 feet and 2 inches. The thickness of the bed is reported to be 7·25 feet, which (allowing for its obliquity to the bore-hole) would indicate that the ore has widened at that depth to 6·8 feet—a variation by no means uncommon. It may be assumed, therefore, that this ore has been proved for a distance of 260 feet on its slope.

150 feet from bore-hole No. 4 occurs the long cut of McCormick & Co. This cut has been opened 400 feet west 20° north along the outcrop of rock ore, and two slopes have been driven downwards.

Both the direction and the strength of the dip of this deposit are suddenly altered, the former being north 20° west, and the latter 45°.

A slope of 18° was started from the cut and carried 30 feet, when a wall of hard trap (dolerite) was encountered, apparently cutting off the ore. Another slope was begun at an angle of 45°, and after proceeding a short distance the trap was again encountered and penetrated, and the ore beneath it was observed to be continuous with the normal dip of the country rock, or about 18°.

The following data were taken from a copy of the records in possession of McCormick & Co., which appeared on a sketch-map made by Mr. R. H. Sanders to illustrate a private report on this region, made by Mr. Franklin Platt:

The record of bore-hole No. 1 showed—

Surface.	*Feet.*	*Surface.*	*Feet.*
Clay	4	Unknown (about)	20
Sandstone	8	Brown sandstone	12
Clay	2	Iron ore	6
Bastard (?) limestone	9·5	Sandstone	4
Sandstone	9·5	Lead iron ore	4
Trap	9		

About 50 feet from the long cut, and towards the western end, bore-hole No. 3 was sunk. It showed—

Surface.	*Feet.*	*Surface.*	*Feet.*
Clay	4	Black and green sandstone	4
White sandstone	6	Brown sandstone	1
Red sandstone	7	Green "	8
Trap	17·5	White "	1·5

Bore-hole No. 4 is situated about 150 feet east of south of the eastern extremity of the long cut. Its record was—

Surface.	*Feet.*	*Surface.*	*Feet.*
Clay	2	Red sandstone	0·5
Gray sandstone	8	Black (?) trap	16·08
Red "	7	White (?) "	6·66
Unknown	10	Ore	1·5
White sandstone	7·5	White sandstone	22·25
Greenish-white sandstone	6·16	Green sandstone	13·16
White sandstone	6·41	Red and white sandstone	6·00
Green "	2·83		

Bore-hole No. 5 sunk in the old bank of McCormick & Co. showed—

Surface.	*Feet.*	*Surface.*	*Feet.*
Soil	8·84	Sandstone	2·00
Green sandstone	0·17	Sandstone and ore	3·00
Iron ore	0·17	Limestone and flint	0·50
Gray sandstone	4·50	Ore and sandstone	0·50
White "	6·17	Green sandstone	5·00
Reddish-green sandstone	12·08	White "	5·00
Black (?) trap	23·07	Green "	6·00
Gray sandstone	3·25	White "	1·00
Iron ore	3·25	Gray trap	2·00
White sandstone	5·00	White sandstone	2·00
Iron ore	1·33	Limestone	3·00
White sandstone	11·00	Gray sandstone	4·50
Limestone and flint	6·00	Red "	4·00
Limestone and fire-clay	10·00	White "	4·00
Red sandstone	14·00	Red "	1·00
Green "	4·00	White "	4·00
White "	9·00	Red "	3·00
Green "	3·00	White "	4·50
Iron ore	2·00		

From the records of bore-holes 1, 3 and 4, and the light thrown upon the structure by the slopes from this cut, this plate of traps appears to strike northeastwardly and to dip gently southeast, conforming no doubt to some plane or planes of cleavage which are frequently met with throughout the entire area of the New Red. This dyke would cross the axis of the open cut at or near its

* A paper read before the American Institute of Mining Engineers at the Philadelphia meeting, June, 1876.

southwestern extremity, and this is possibly the reason that an exploitation pi sunk some fifty feet from the latter point discovers the ore "pinched out."

From the records of bore holes Nos. 1, 3 and 4 a trap dyke is recorded at a depth of 33 feet, 17 feet and 51 feet from the surface respectively. This dyke is represented as at least 9 feet thick in No. 1 (with a possible extension downwards of 42 feet marked "unknown"), 17½ feet in No. 3 and 16 feet in No. 4.

The positions of bore-holes Nos. 1, 3, 4 and 5 can be observed upon the map of this property contained in supplement-sheet accompanying this. It appears that in No. 1 a mass of trap was struck at 33 feet from the surface, and entered for about 9 feet. For the next 20 feet no record of the boring was kept. In No. 3 the trap was struck at 17 feet below the surface, and entirely penetrated the thickness, proving to be 17½ feet. In No. 4 a trap was encountered at 51 feet below the surface, and proved to 16 feet 1 inch thick. In No. 5 a trap was met with 23 feet below the point of starting at the bottom of the bank, or 18 feet below the surface, and is said to be 23 feet 1 inch thick. There is nothing inconsistent with the idea that these occurrences of trap represent points on the upper surface of a large dyke, because of these records of varying thickness. These differences will frequently arise from the close resemblance which the altered rock in contact with the dyke bears to the latter, while the exhibition of plates of trap between the regular beds and in the planes of cleavage and jointing is not run in the New Red sandstone. The ascertained thickness of the plate in bore holes Nos. 3 agrees very well with that in No. 4.

The thickness in No. 1 is not given independently of the fact that much is called "trap" which is nothing but indurated sediments; the expansion of the bed (if it be the same) to 23 feet in bore-hole No. 5 is not altogether anomalous. By assuming then that the upper surface of this same bed of trap was met with in bore holes Nos. 1, 3 and 4 at 33 feet, 17 feet and 61 feet* below a common plane (the 650 feet contour), we have the data for calculating the inclination and direction of dip of the bed, and the line of the strike on this plane. The latter proves to be N. 23°, 30′W. It was obtained: 1st by calculating the point at which a straight line passing 33 feet below the mouth of No. 1, and 17 feet below the mouth of No. 3, would intersect the horizontal plane in which the starting points of Nos. 1 and 3 both lie. 2d. Calculating similarly the point on this plane at which a straight line 51 feet below the surface at 4, and 17 feet below the surface at 3 would emerge. 3d. Establishing similarly the intersection of the datum plane by a straight line passing 51 feet below 4 and 33 feet below 1. It is evident that if these three points thus projected fall into the same straight line the inference is very strong that the surfaces of trap from which they were independently calculated are parts of one large surface or approximate plane. This they very nearly do. The deviation of the last named point is hardly to be avoided owing to the acuteness of the angles made by the lines joining the bore-holes.

In Plate I the letters I N M and V are chosen to represent the bore holes I, III, IV and V respectively, the number of downward strokes in each of the first three letters corresponding to the number of the bore-hole in each case.

(Plate II. Fig. 1) selecting bore-holes Nos. 1 and 3 (I N) we have the distance between them IN=116 feet.

II′=depth from the surface to trap at No. 1=33 feet.

NJ=depth from the surface to trap at No. 3=17 feet.

To find the length of the line AI or the distance from the mouth of the bore-hole No. 1 at which a line passing through it and 3 would intersect the outcrop line. Through I′ draw a line parallel to AI. Produce the vertical NJ till it intersect this line A′ I′ at J′.

Let the angle AI′A′ = α
" the line AI = x

Then $\frac{JJ'}{I'J'} = \frac{II'-NJ}{IN} = \frac{16}{116} = 0{\cdot}13791 = \tan \alpha$

$\alpha = 7° 51$

$x = 61 \cot \alpha = 239{\cdot}35$ feet.

In the triangle MBM′ (Plate II. Fig. 2)

Let x = MB MN = 412 feet.
" β = MBM MM′ = 61 feet.
NJ = 17 feet.

$\tan \beta = \frac{44}{412} = 0.10679 = \tan 6° 6'$

$x = 61 \cot \beta = 570{\cdot}791.$

In the triangle VCV (Plate II. Fig. 3)

Let x = VC VN = 602 feet.
" y = VcV′ VV′ = 58 feet.
NJ = 17 feet.

Then $\tan y = \frac{41}{602} = 0{\cdot}068106 = \tan 3° 54$

$x = 58 \cot y = 850{\cdot}77$ feet.

In the triangle MDM′ (Plate II. Fig. 4)

Let x = MD MI = 390·5.
" δ = MDM′ MM′ = 61.
II′ = 33.

Then $\tan \delta = \frac{28}{390{\cdot}5} = 0\ 071702 = \tan 4° 6$

$x = 61 \cot \alpha = 850\ 993$ feet.

If we plot these points accurately on the map and lay off distances corresponding to the calculated lengths of the several perpendiculars of the three triangles, viz.: IAI′, MBM′, VCV′, and MDM′, it will be found that the three points A, B and D fall very nearly in a straight line. But owing to the greater angle which IA and MB make with the outcrop line, the points calculated from them are more reliable than the points as calculated from MDM′ in which the angles MDM′ and MM′D are very small, so that a very slight error in the experimental data would change the resulting side MD greatly. Neglecting the point D for the moment, and drawing the line through AB, it is observed that it passes *within five feet* of the point as determined by MDM′. In view of the fact that Nature does not pour out trap or arrange the layers of rock in absolute geometrical planes, this deviation of 5 feet from the line due to an excess of 15 feet in a length of 841 feet (1.7 *p. c.*) is inconsiderable.

In the triangle VCV′ the conditions are yet more unfavorable for accurately determining the position C. The angle between AB and VC is but 13° 25′, and the angle VV′C is 86° 06′, while the rough statements in regard to the bore-hole No. 5 render it very difficult to locate the point V′ with exactitude. Of course in triangles when hypothenuse and perpendicular make so small an angle, a very slight error in angle will produce a very considerable one in the horizontal distances. Owing to these facts (and very probably also to local irregularities in the bed) the point C falls 50 feet from the line and 212 feet short in a line of 841 feet, showing an error of 25 *p. c.*

On the other hand, the close agreement of the other more favorably constructed triangles furnish a strong support to the above supposition as to its location.

The dip of the bed of trap as calculated by assuming this line of N. 23° 30′ W as the correct outcrop on a plane 650 feet above high tide in Philadelphia, is given in the following tables:

Dip calculated from	No. 1	E. 22° 30′	N. 9° 29′
" " "	No. 3	E. 23° 30′	N. 9° 39′
" " "	No. 4	E. 23° 30′	N. 8° 1′
" " "	No. 5	E. 23° 30′	N. 9° 39′

Dip calculated assuming the trap in Logan's shaft to be the same as that in the above bore holes, 2° 51′.

It is evident from this that there are two plates of trap occurring here at a perpendicular distance from each other of about 15 to 20 feet. The analogy which this structure presents to that of the Cornwall mines will be reserved for a future occasion. Continuing this assumption as to the identity of these scattered occurrences of trap in one bed, we find that trap should have been met with in the southwest slope of McCormick & Co's long cut at 30 feet below the surface, and in the northeast slope of the same cut at about 54 feet below the surface. The first of these statements accords well with the facts.

These slight discrepancies in the calculated dip of the trap are of no importance, and are far within the limits of accuracy of observation.

This outflow of trap probably followed one or more of the planes of cleavage of which these rocks are full. If this interpretation be correct, the upper surface of the lower dyke would emerge on the surface of the ground midway between the southwest end of the long cut and the exploitation pit still further to the south, where the ore was reported to have "pinched out," and if we assume as the thickness of the bed 17 feet and 9° 29′ as the dip, the breadth of the outcrop would be 60 feet. This would embrace the entire area of the pit. It is not clear how far this outcrop extended S. 23° 30′ E., nor whether its breadth was maintained. If persistent it would pass between Underwood's slope and the old abandoned excavation next northeast of it, and would thus interpose a wall of igneous matter between the Underwood, Smyser, Bell and Grove banks from those of Mr. McCormick, including the Logan shaft and Price's.

There is nothing in these observations of the thickness inconsistent with the view that these are made on the same dyke, and the probability that Nos. 3 and 4 are so is very strong. Assuming this to be the case, and calculating the inclination and direction of the upper surface of this dyke from the depth beneath, a common datum plane of its appearance in the three bore-holes, we find that its dip is 9°—10° E, 23° 30′ N, and projecting its outcrop on the surface it is found to pass through the small excavation where no ore was found southwest of the main cut. The extent of the strike line of this dyke is not certainly known, but if continuous, it passes through the bank of the Wrightsville Co., and divides the Underwood, Smyser, Bell, Grove and Price mines from those of Mr. McCormick.

It is perhaps owing to this circumstance that the outcrop of the Logan ore is not seen to connect the Underwood slope with some point 100 feet or more south of the Logan shaft; for if this dyke be continuous in a cleavage plane or other joint in a direction S. 23° 30′ E. from its supposed outcrop at the McCormick cut, it would cut off that portion of the vein between the shaft mouth and the natural line of outcrop of the Logan ore by cutting the vein a short distance west of the former. It follows also that if continuous under the surface, and with the observed gentle dip of 9° 20′, it will intersect the Logan slope at a point far below where the trap was observed, viz., at 12 feet below the 340 feet contour line. The record of this Logan shaft is not at hand, but specimens of dolerite were obtained from it and studied under the microscope, which in mineral constitution (*i.e.*, number and distribution of apatite crystals, etc.) agreed very closely with similar specimens from the Mumper or McCormick cut examined in the same way.

This renders it likely that the outflow of trap along the two planes just mentioned, viz., on the Logan shaft, and in the Underwood and McCormick mines, was contemporaneous, or at least had the same origin. The whole deposit of ore of this part, the Dillsburg region, seems to be reducible to, 1st.—Deposit of ferruginous matter along the bed planes of the rocks of the new red sandstone in an irregular manner. 2nd.—The presence of one (and probably more) large dykes following planes of cleavage or jointage, and striking northwest and southeast with a gentle dip. 3d.—The alteration of mud rocks and slates to "traps" (?) of induration, and of the more or less hydrated iron oxides to magnetic and specular ores. The greenish color of these soft ores, when not derived from the oxidation of copper, is due to the commingling of the lower chlorite and hydro-mica slates with the iron ore, and indicates possibly that at least some of this ore was obtained from its depositaries in the older slates. But that, even if entirely derived from this source, they have been made up in the course of their transfer to the beds of the new red sandstone appears to be beyond question.

The observations of Professor Lesley, Dr. Hunt and others, of the great Cornwall iron-ore deposit, agree in ascribing its existence to several protecting plates of hard trap which have resisted the erosion, by which the soft ore, if not thus protected, would probably have been entirely destroyed. It is not quite certain how much of the magnetic particles with which these ores are mixed may have come from the trap itself. It is likely that much, if not all, is to be ascribed to this source; but however that may be, it cannot but be of the greatest significance that the two plates of trap which occur near these mines enclose or cover the greater number of the producing deposits.

From an inspection of the ground it appears that the new King bank (which seems to lie outside of this protecting influence) has a dyke of its own on the eastern (*upper*) side.

The points in favor of the above structure are as follows:

1. The existence of trap in bore-holes Nos. 1, 3, 4 and 5, and in McCormick's cut, Underwood's slope and Smyser's bank, at points which are very approximately in one plane.

2. The non-occurrence of trap in bore-hole No. 2 (though so near to Nos. 1 and 3), because No. 2 is located just below the edge of the lowermost of these plates.

3. The trap in Logan's shaft is corroborated by the shape of the contours north of the long cut. Its supposititious outcrop closely coincides with the

* Ten feet must be added to the recorded 51 feet below the surface because the datum plane of No. 4 (the surface at that point) is ten feet lower than the surface at Nos. 1 and 3.

nose of a small hill, as it necessarily would do, owing to its superior resistance to erosion.

4. The practically similar thicknesses of the trap as measured in bore-holes 3 and 4.

5. The cutting out of the ore in the pit at the southwest end of the long cut.

6. The identity of the mineralogical constitution of the traps of Logan's shaft and the long cut viewed under the microscope.

If these facts be accepted as conclusive as to the structure, the idea of faults bringing up the same bed of ore successively to the surface must be abandoned, unless it be supposed that the dislocations took place before the injection of the molten rock, in which case the extension of the latter on cleavage planes over so wide an area is rendered in the highest degree improbable.

The supposed outcrop of the trap has been drawn in the accompanying map, with reference to the 5 feet contours, on the assumption that tangent of 9° 29′ (the assumed average dip of the trap), or 0·167043, is 1-6; or, in other words, that the ratio of the vertical distance apart of the contour lines is to the horizontal distance apart of the projections of the trap at those contours as 1 is to 6 (more accurately it 1:5·98).

DISCUSSION.

Mr. HEINRICH.—Although I am almost perfectly ignorant of the geological features of the new red sandstone of Pennsylvania from personal observation, I have had the opportunity on the other hand of comparing the same formation closely in North Carolina and Virginia. There is one remarkable feature which I think proper to call your attention to here.

We have in the formation of the same age on Deep River in North Carolina coal and iron ore; the clay iron ores and a black band ore, in regular stratas, exist in connection with the strata containing the coal seam. The black band is rich enough to be used as an iron ore, although it is too high in phosphorus.

In Virginia, I am sorry to say, we have not been able thus far to discover iron ore of any amount beyond some bog iron ore of recent origin, and I have also found a ferruginous black limestone in a regular but thin stratum, containing about 10 to 15 per cent. of iron peroxide.

The mineralogical constituents of the strata, as well as their external aspects, are widely different. Your sandstones here are mostly of a deep red color; so they are in North Carolina. In Virginia we hardly ever see any such sandstone on the surface. Only towards the center of the basin, 850 feet below the surface, and only 100 to 250 feet from the granite floor of the basin, do we meet with ferruginous sandstones which even contain specks of specular iron ore. All the rest of our rocks are grey or black slates, argillaceous grey sandstones, and a variety of feldspathic sandstones, white and various shades of grey.

The material from which the North Carolina formation was formed was taken from the old taconic slates containing also deposits of magnetic and specular iron ore. Those of Virginia, on the contrary, were formed from the borders of the granite, entirely barren of iron. The former seem to correspond with the views just explained by Mr. Frazer; the latter seem to indicate the reason for the absence of iron ore of any consequence in the Virginia deposits.

ABSTRACTS OF LECTURES ON MINING.—No. XXVIII.

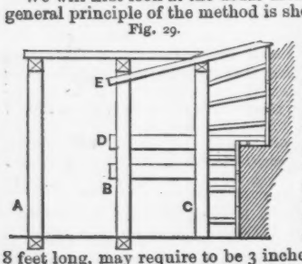
By Prof. W. W. Smyth, M.A., F.R.S., Royal School of Mines, London.

(From the London "Mining Journal.")

We have now to consider the method of driving through difficult ground, what is known in this country as *spilling*, in Germany as *Getriebe arbeit*, and in France as *palplanche*. If met with only locally in mines where the pressure has been too great for the timber, or the timber has rotted, or was not well put in, a run, or "cave," occurs, and the ground falls in; and if this fills up the level for only a few feet or fathoms the difficulty is soon got through. But the case is more difficult where the driving is through watery or loose ground, which so frequently occurs in driving cross-cuts through measures in which alluvial ground interferes, and especially in driving an adit level in some river valleys. If you expect old workings in front, it is necessary to keep bore-holes in advance, and to take all those precautions mentioned before. If there is difficult ground ahead at some unknown distance, especially if the ground in front be fragile, or large quantities of water come away from it, one precaution is the reducing the size of the level, so that if necessary it may be easier to secure it. If the ground gets worse it may be best to have bore-holes in advance, and plugs ready to drive in these holes if they suddenly require stopping up. These bore-holes from the main level will not be sufficient, on account of the uncertainty of the shape of the ground ahead, and it is therefore advisable to have small side levels, from which additional bore-holes may be put out. These holes serve also the purpose of tapping the ground, and may drain off the water from it gently. If the weight of the material to come away is considerable, and if the material is extremely fluid, it is always better to tap it, and find out the best place to cross it, otherwise the ground has to be got through by spilling. In working stratified deposits below marshy ground, or below a river or the sea, there are many cases in which similar arrangements will be needed. With coal seams, under these circumstances, gradually creeping up toward the sea, it may be uncertain as to whether the seam has a watertight cover or not, and it is therefore dangerous to go on with the ordinary levels. If the water begins to make its appearance it will be necessary to reduce the size of the level, and then go on testing the ground before you by means of bore-holes.

We will first look at the usual method of spilling by means of laths. (The general principle of the method is shown in Fig. 29.) The sets (A, B, C) consist of legs and a cap piece, and are usually placed on lower transverse pieces; and where the ground is very fluid, planks are also placed below. Planks are driven forward behind the sets (two of them are shown at D), close together in bad ground, or in other cases leaving intervals between, which are filled with moss. These planks are driven slightly outwards, at an angle of 12° or 15°, the pressure of the sides gradually bringing them close up to the sets. In some cases these planks or laths, which are 5 feet to 8 feet long, may require to be 3 inches thick. Upper laths are similarly driven (E), inclined at an angle of 15° or 20°, the pressure of the sides gradually bringing them down on the cap pieces; and this pressing down will again be hindered to some extent by keeping the laths to a sharp edge. The forebreast is supported by planks strutted against the first set, if the level is of a large size or the ground very watery, or consisting of soft sand; in ordinary ground no special protection will be needed in front. In some cases, as in the case of East Wheal Rose, the ground cannot be left even for a few hours without a risk of its running. The breast is advanced by taking out the boards in succession from the top downwards, and advancing each a certain distance, as shown in the figure. The object is to get in a transverse sole piece to the set, C, as soon as possible, so as to be obliged to remove as little material as possible; moss is put in and pressed down by the timber, and the whole is kept down by a strut from the roof, till it can be properly secured. The alternate steps may afterwards be taken out, as B, leaving the laths resting on A and C. By this method many levels have been driven through bad ground with great success; but there is one disadvantage—that the removal of large masses of loose material leaves cavities behind the timbering, and the sudden shock due to falling pieces of rock into these cavities may fracture the timber.

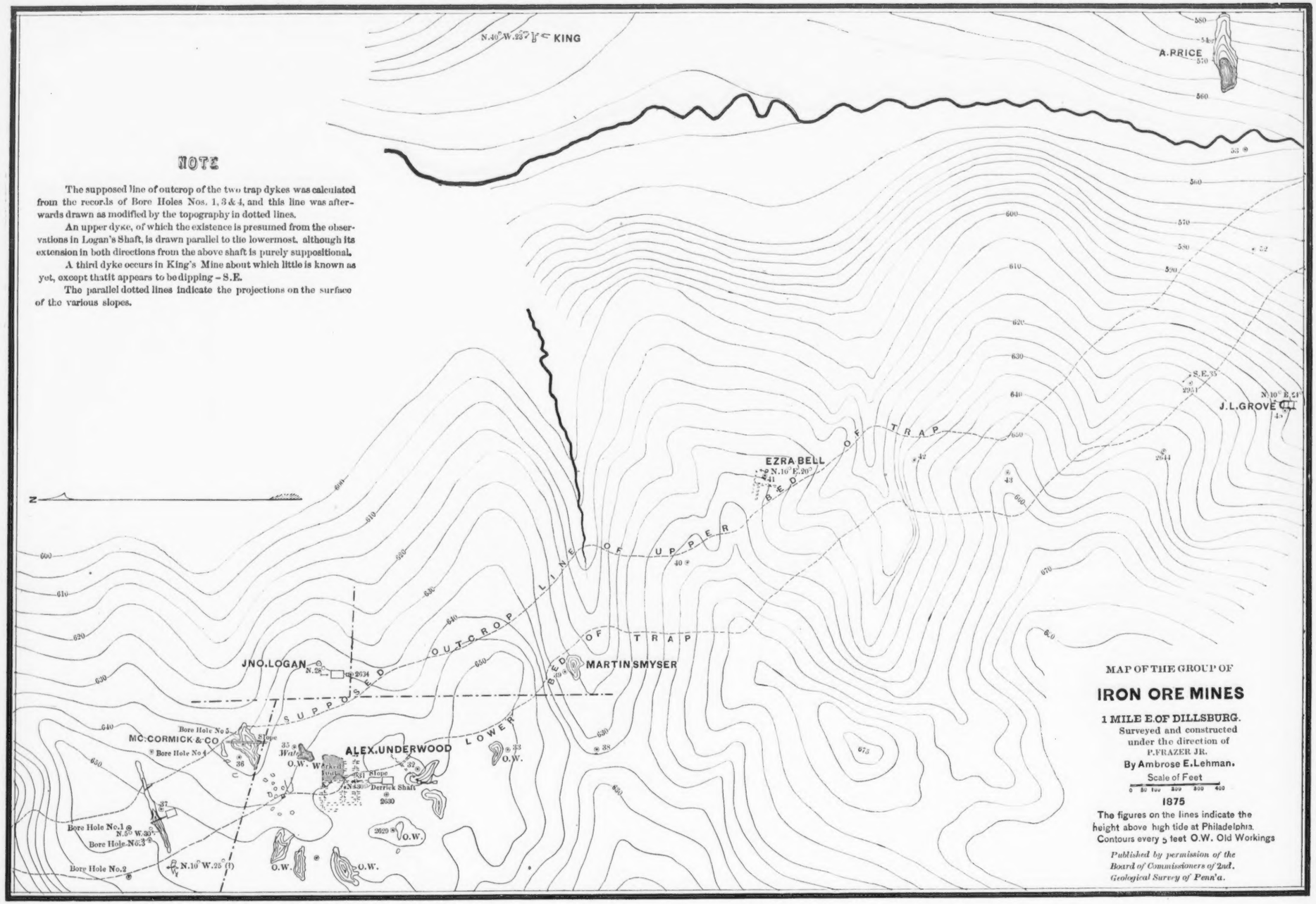
Fig. 29.



In Belgium and the part of Prussia which lies between Belgium and Westphalia, another method has been very successfully carried out; in the first place by Durieux, and afterwards by those who followed him. The principle is, that instead of removing the material, you force it forward before you. The levels are timbered, as in the other system, the planks at the top of the sides are similarly driven forward, but the floor is different. The floor, which is often the most difficult part to deal with, is driven full of pickets (like conical wedges), 10 inches and 12 inches long, which are intended to be permanent. The face is also filled with these pickets, somewhat longer, 14 inches or 15 inches, and four inches to five inches diameter. These face pickets, however, are unlike those in the floor, travelling pickets—they are constantly being forced forward; the faces of the pickets becoming crushed by beating, fill up the space completely, so that there is no necessity for the introduction of smaller pickets between. The introduction of this method was a most notable improvement, since by the methods in use previously such vast quantities of material had to be removed. Thus, in driving levels through a certain bed in Belgium, by the old method, for every single meter of linear advance 40 to 45 cubic meters had to be removed; by Durieux's method 20 to 30; while by the latter improved method only 2 to 1½; this being the material which slowly oozes through the timber.

In driving the Thames Tunnel Brunel adopted a method very similar to that of spilling. Having a large excavation to make—38 feet by 22 feet—on account of the great mass of brickwork to be put in, he subdivided the face into portions, each to be worked separately. He divided the face into three stages, and each stage into eleven cells, one man working in each cell. By this means the area of each working place was reduced to a minimum, and the actual forebreast upon which each man was working was meant to be protected by a series of boards strutted against the cast-iron shield (which formed the shells), which again was strutted against some permanent structure, such as the masonry behind. The work advanced by taking down successively the boards in the forebreast.

We have next to consider the application of masonry—stonework or brickwork. Where mines, or portions of mines, are intended to be of a very permanent character, it may be a matter of high importance to introduce this method of securing the ground; but there are, of course, many cases where such arrangements are perfectly impracticable, where you have, for instance, no permanent or sure foundation. Walling has been objected to in many countries for other reasons—as to its great expense, the difficulty of introducing the materials into the mine, and the danger and difficulty of the preparation. But if the pressure be very considerable, so as to destroy timber very rapidly, and if you have anything you can look upon as a permanent foundation for the masonry, and if you have a material suitable for the purpose not far off, it stands to reason that, although in the first instance more expensive, it would be a very important point to introduce it. In our southwest mining districts walling or arching is very little in use, not so much as it deserves to be; in the metalliferous mines of the North of England it is much employed for particular purposes, especially for securing their long levels; in the colliery districts you find a good deal of it. On the Continent very large sums have been expended on walling, and it has there been carried to great perfection. It is a matter depending much on the geological structure of the country, and the convenience of the materials to be obtained. In most of the great mining districts stone can generally be obtained; sometimes even that obtained in the workings may be employed. Among the suitable materials may be mentioned many of the older rocks, which have a tendency to split parallel to the planes of stratification, as the sandstone of the coal measures and mountain limestone series; these are much used in Durham, the Forest of Dean, etc. Other stones, which have a somewhat similar mode of splitting, are employed in Saxony and some other parts of Germany. Mica schists, various hornblendic rocks, and clay-slates may be used, but their joints have to be looked to, and also it should be noticed whether the material is liable to destruction by oxidation. Granite comes into play more rarely, but it has been used for some arched levels in the Tresavean Mine. Whatever the material be, the main point to notice is that it should be marked out by natural joints into pieces of suitable size, so as not to require much dressing. In some of the central districts, where stone is difficult to obtain, and where there is plenty of good clay, brickwork is much used. Years ago in the neighborhood of Castleton, in Derbyshire, there were some ancient mines open, and in these it could be seen how the old men had taken slabs of limestone 3 inches to 4 inches thick, and had placed them across from one wall of the lode to the other at intervals of a few inches, and then stacked attle on them, thus forming a most admirable roof. The lecturer has seen in the south of Spain, at the opening of some very ancient works, slabs of granite and sandstone used in a somewhat similar manner, only to support the larger lodes of the districts two walls were built up the sides of the lode, and then two slabs on these were raised against one another. Passing to true arching, there is one midway step which may be mentioned—that seen in such mines as quicksilver ones, where it is not necessary to carry the arching throughout. Belts at distances of 2 feet to 4 feet asunder are put in, with perhaps arching below for the passage of water; and in good strong ground it may be sufficient to lay planks from one belt to another. If the pressure comes from above you may conveniently put in a sort of flat arching, and if the lode be inclined the arch will be put in in such position that the central line will be on the axis of the lode; the ends of the arch will lie on faces cut for it on the rock, and these arches will generally be put in dry stone. If one wall requires the special support, a parting arch is frequently put in. One very important point to be attended to is that of not leaving empty space behind the walling, they should all be packed with attle. When the London sewers were being constructed, and the question as to their form considered, it was a question whether the oval or elliptical form is the one which can be used with the least expense of material and the greatest strength. The oval is especially suitable when you want the greatest space at the bottom, and you can take it in many different propor-


NOTE
The supposed line of outcrop of the two trap dykes was calculated from the records of Bore Holes Nos. 1, 3 & 4, and this line was afterwards drawn as modified by the topography in dotted lines.
An upper dyke, of which the existence is presumed from the observations in Logan's Shaft, is drawn parallel to the lowermost, although its extension in both directions from the above shaft is purely suppositional.
A third dyke occurs in King's Mine about which little is known as yet, except thatit appears to be dipping – S.E.
The parallel dotted lines indicate the projections on the surface of the various slopes.
N.40° W.33° KING
A.PRICE
J.L.GROVE
EZRA BELL
N.10° E.20°
BED OF TRAP
OUTCROP LINE OF UPPER
SUPPOSED
LOWER
JNO.LOGAN
MARTIN SMYSER
MC:CORMICK & CO
ALEX.UNDERWOOD
Bore Hole No.1
Bore Hole No.2
Bore Hole No.3
Bore Hole No.4
Bore Hole No.5
Derrick Shaft
O.W.
Slope
MAP OF THE GROUP OF
IRON ORE MINES
1 MILE E.OF DILLSBURG.
Surveyed and constructed under the direction of P.FRAZER JR.
By Ambrose E.Lehman.
Scale of Feet
1875
The figures on the lines indicate the height above high tide at Philadelphia.
Contours every 5 feet O.W. Old Workings
Published by permission of the Board of Commissioners of 2nd. Geological Survey of Penn'a.

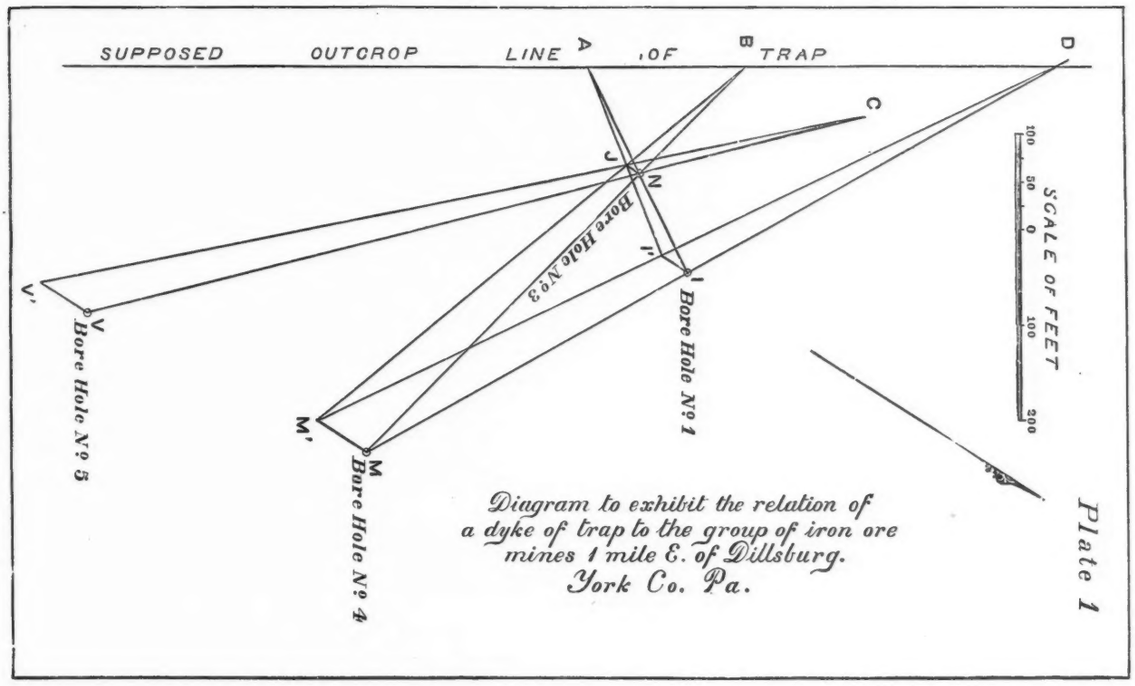
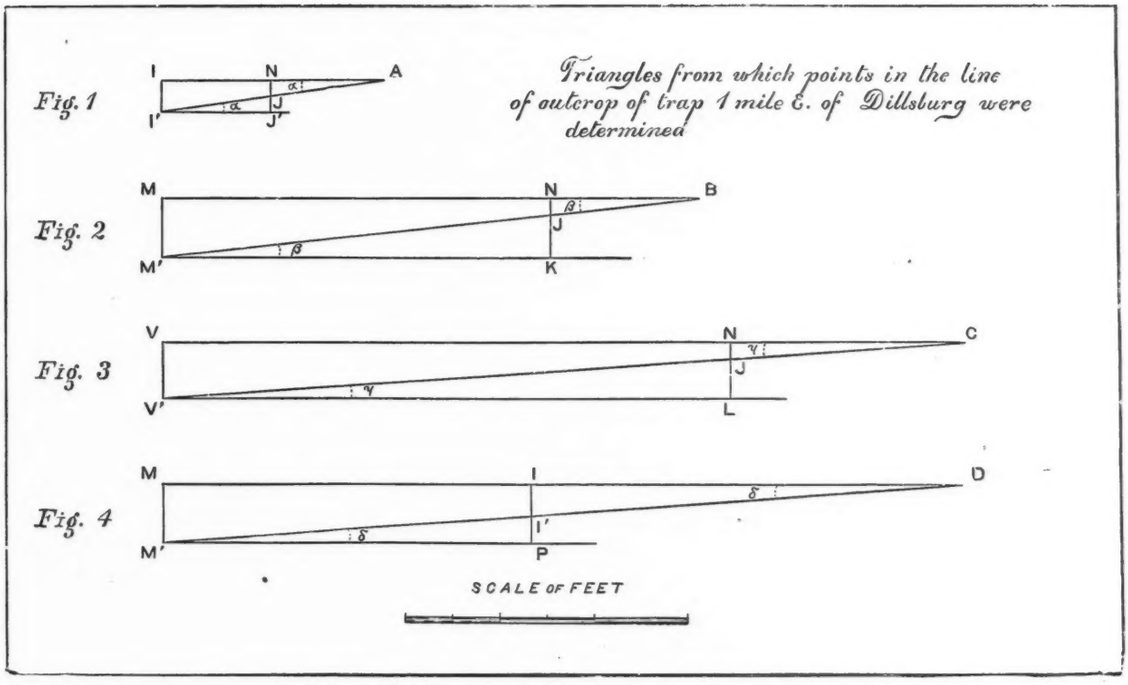


Diagram to exhibit the relation of a dyke of trap to the group of iron ore mines 1 mile E. of Dillsburg. York Co. Pa.

Plate 1



Triangles from which points in the line of outcrop of trap 1 mile E. of Dillsburg were determined

IRON ORE MINES OF YORK COUNTY, PA.

(To accompany Paper by Prof. PERSIFOR FRAZER, Jr.)

tions. In the long levels of the collieries of the North of England the men who drive the level undertake to put in the arching; this has the usual form of a semicircular arch above, raised on two side walls. The walling is generally constructed in lengths, so that if necessary any separate length can be taken down. At times there may be great difficulties, as near the shaft bottom, and the pressure in some of the modern deep collieries has been such as to make strong stone scale off, so that strong timbering had also to be put inside it to prevent the scaling. In fact, scarcely any means of securing has been found to prevent the frequent necessity for renewal. If the presure acts from the sides as well there will be a tendency to bulge the wall towards the interior, and then it will be liable to break suddenly; such things should be looked to at the very commencement. In the adit levels of many German mines an elliptical form has been very advantageously employed. Where you have not strong stone below for an arch to rest on, you have to choose between the oval and the ellipse. The circumstances under which arches are put in vary very considerably; when bricks are used from a half brick to three or four course may be employed, and with stone from 3 feet to 4 feet, according to circumstances.

MINING NOTES.

THE COMSTOCK MINES.

We take the following from the *Gold Hill News* of the 31d ult., showing the condition of some of the principal mines of the Comstock lode up to that date:

Consolidated Virginia.—Daily yield, 285 tons of ore, keeping the Consolidated mill steadily running. On the 1,500-feet level the spur of ore recently struck is 28 feet in width, and will mill about $100 per ton. On the 1,500-feet level the enlarging and widening of the drif s connecting with the Gould and Curry is nearly completed. On the 1,200-feet level the main south drift connecting with the Gould and Curry is being enlarged and repaired as rapidly as the nature of the work will permit. This is being done to get at and extract the ores now known to exist in that portion of the mine. The west drift from the C. and C. shaft has passed through the poor streak encountered last week and is again in first-class ore. This streak of porphyry was something very similar to that found on the east side of the ledge on the 1,500-feet level.

California.—Daily yield, 500 tons of ore, keeping the mills crushing to their full capacities. The ore breasts and stopes are showing well at every point. The north drift, connecting with the Ophir on the 1,400-feet level is being enlarged. The southeast drift from the winze on the 1,650-feet level is steadily though slowly advancing, the face in excellent ore. Sinking the C. and C. shaft has made but very slow progress during the week owing to the steady and fearfully strong flow of water at the bottom.

Gould and Curry—The south drift on the 1,700-feet level is being pushed rapidly ahead. The east cross-drift on the same level has been stopped and diamond drills substituted. These drills are now about 100 feet in from the face of the drift, without producing any important results. While these drills are being used, work in the winze below the 1,700-feet level is suspended on account of not having sufficient air with which to drive the machinery of both places. Work on the bob-pits and water-tanks in the main shaft is progressing finely.

Justice.—Daily yield, 350 tons of ore, keeping the mills all steadily running. Another mill, the Atlas, has been added to the reduction force. The ore stopes on the 400, 600 and 700-feet levels show but little if any change. The developments on the 800-feat level continue of the most favorable description. The northeast drift on the 1,000-feet level shows no new ore prospects. It is making excellent progress. The main southeast drift on the 1,000-feet level is still delayed by the strong flow of water recently struck, but which is slowly and gradually decreasing.

Yellow Jacket.—Both of the two east cross-cuts on the 2,040-feet level are being driven forward, the face of each drift showing a decided improvement for the past two days. These two cross-cuts are located between the north and south winzes. On the 1,740-feet level the west cross-cut near the north line is also penetrating a very favorable character of ground. The new shaft is down 420 feet to-day. The sinking is excellent with the exception of a considerable flow of water coming in at the bottom.

Overman.—Sinking the winze below the 1,200-feet level is making good progress with increasing prospects. The prospecting drifts on the 1,300-feet level are making the best of progress, the water having been pretty well drained at that point. The drift running to tap the ledge on the 1,400-feet level is advancing rapidly, the flow of water being greatly reduced. The pumps continue to work admirably, and handle the water with the most perfect ease. The connection of the south drift on the 1,200-feet level with the north drift from the Caledonia mine is fast cooling off the drifts and putting everything in the best condition possible for cross-cutting.

Belcher.—Daily yield 130 tons of ore, keeping the Santiago mill crushing to its full capacity. Sinking the main incline is making the best of progress. Sinking the drain shaft is also making good headway, notwithstanding a steady, strong flow of water at the bottom. The 1,800-feet station is completed, and drifts have been started to open and prospect the ore vein at that point. The south drift on the 1,600-feet level is making good progress, with no changes of importance to note.

Sierra Nevada.—The flow of water at the bottom of the shaft is still very strong, but is easily handled by the pumps. The face of the north drift on the 1,700-feet level is developing some fine quartz and low grade ore. The south drift on the same level is making good progress, the face in a fine character of good ledge material. The north, south and east drifts on the 1,500-feet level are each making good headway, without any change of value whatever to report. The prospecting drif s on the 1,250 and 1,000 feet levels show no important changes. During the past year there were 10,363 feet of drifts run, and 395 feet of shaft sunk in this mine. The receipts were from four assessments, aggregating $500,000, and rent of Sacramento mill $4,000. making the total receipts $504,000 The principal expenditures were: Old shaft $69,976; new shaft $352,335; sundry accounts $73,414.

Crown Point.—Sinking the main incline is making the best of headway, the rock on the bottom being quite firm but blasting out well. It is now down to within about ten feet of the 2,000-feet level. As soon as a sufficient depth is attained the 2,000-feet station will be opened and a drift started to prospect the ore vein at that point. The north drift on the 1,700-feet level is developing some low grade ore, but has not as yet found anything that will pay for extraction and milling. The opening up of the 2,000-feet level will give a depth of 300 feet of virgin ground below the 1,700-feet level to explore and prospect.

Julia.—The main west cross-cut on the 1,800-feet level, from the south drift, is making the best of progress. This drift, after penetrating the quartz and ore recently struck at a distance of ninety feet, passed into a large horse of porphyry some thirty feet or more in thickness. This porphyry has been passed through, and the face of the drift is again in quartz and ore of a better character than any that has yet been struck. The vein at that point is undoubtedly wide, and the quartz shows a decided improvement with every step of progress made. The south drift, which was recently started on the east body of ore, is making good progress, the face in solid quartz of the finest character. Nothing is doing in the drifts south on the 1,600-feet level at present.

Savage.—A breakage of a pump rod during the first part of the week caused a stoppage which permitted the water in the shaft to rise to a distance so great as to stop all work in the main south drift on the 1,900-feet level. The broken rod has been repaired, however, so that everything is again in the best of working order. The water has been reduced below the 1,900-feet level, and work has been resumed in the south drift on that level, which is being advanced to meet the north drift from the Hale & Norcross.

Ophir.—The main incline has reached the 1,800-feet level, at which point a station is being opened. In the meantime a winze is being sunk below the 1,700-feet level to prospect the vein in a downward direction. An up-raise is also being made from the east drift on the 1,700-feet level to connect with the 1,600-feet level. The north drift on the 1,700-feet level affords no new features. The production of ore is about fifteen tons per day of the value of $30 per ton.

Hale & Norcross.—Owing to a breakage of a pump rod in the Savage during the first part of the week the water rose rapidly to a considerable distance above the 1,900-feet station, the pumps unaided being unable to control or keep it down. The Savage break, however, has been fully repaired, and both pumps running in conjunction with one another, are again rapidly gaining on the flow. The water is now down to its old status, below the 1,900-feet station, permitting of a resumption of work in the connecting drift with the Savage on that level.

Sutro Tunnel.—Total length of tunnel, 15,780 feet. Somewhat softer material has been met with in the face of the header during the week, allowing of better progress.

Leviathan.—At the annual meeting of this company, held in San Francisco on the 19th ult., the receipts for the year were shown to be $80,301.05, which included three assessments. The assets of the company on the first of the year were given at $:16,000. The president's report is as follows: At the time of the last annual meeting we were much troubled by the flow of water struck in the face of the main drift on the 400-feet level, and we did not get it out and under control until March 4th, when the work of sinking was resumed, and continued vigorously until the 27th of May, at which time we had attained a depth of 862 feet in the shaft and drifted 500 feet on the 700-feet level. Then the trustee directed that the work be suspended in consequence of the continued litigation the company were being subjected to. In order to protect the work already done, I erected a substantial bulkhead on the 400-feet level to hold the water back; and have put the machinery in order, so that no damage could be done to it while we were lying idle. On the 28th of December, litigation having apparently ceased, I made preparations to resume work. I found, on close examination, that the machinery was all in good order, with the exception of the wire cable, which had to be tarred and repaired. We have two engines of eighty-horse power, and I feel confident that we will get the water out within two weeks from date, when sinking will be resumed at once. The dip and formation of the ledge on the 400-feet level shows that we will cut it in the shaft within the next 100 feet. It will cost, while taking out the water, about $8,000 per month, but after that the expense will be decreased.

Belcher Gold & Silver Mining Company. (Annual Report).—This Company held its annual meeting on the 30th ult. The following is the Superintendent's report: For the year ending December 31, 1876, there were extracted and shipped to the mills for reduction 131,228 tons of ore. This ore was extracted from the various levels above the 1600-feet level, principally from the east and west streaks outside the main ledge. An attempt was made to work the fillings, but the result proving barren, it was abandoned. On the 1500-foot level the ore is not of the quality which will pay for extracting, although the ledge upon this level retains its regular course and width. Crosscuts run at different intervals on this level developed no ore which would pay for extraction. A drift run to the south line and a crosscut run east shows a fine body of quartz. The 1600-foot level drift cuts the vein 618 feet south of the north line. This drift shows a fine quality of quartz. A drift has been run south to the Seg. Belcher line. Crosscuts made at different points developed no ore. The main incline is down 160 feet below the 1600-foot level, and as soon as it reaches the 1800-foot level a new station will be opened. The air shaft has attained a depth of 1,850 feet. When the pumps are lowered, a station at the 1800-foot level will be opened, and drifting and crosscutting on the vein will be commenced. During the past year 3,270 feet of drifts were run; 1,012 feet of winzes and inclines sunk. Large improvements and additions were made to the surface buildings and machinery. The 131,328 tons of ore worked produced $2,920,461, being an average yield of $22 23 per ton.

THE BULLION IN HOT WATER.—On the 1st inst. a heavy flow of water was tapped in the east drift on the 1,600-feet level of this mine. A sudden burst had been so well guarded against that when the flood came the face of the drift was eminently secure and everything left in the best condition possible until the water is drained. The water is very hot, showing a temperature of 165 degrees, which is taken as a sure indication that it comes from the vein on that level. For some time past a small flow of water has been coming from the bottom of the drifts on the 1,500-feet level. These drifts are in the quartz vein, and since the water was tapped on the level below have become perfectly dry. This proves beyond a doubt that it all constitutes one body, and leads to the conclusion that it is nothing more than a large pocket which will drain out in a day or two. The water passes down through the winzes to the 1,700-feet level drift, through which it flows to the Imperial incline, from which it is taken by the Imperial pumps to the suface. The pumps are running at the rate of six strokes per minute, and it was found necessary to add the help of the bailiug tanks in order to keep the water well under control. All work is of course suspended on both the 1,600 and 1 700-feet levels of the Bullion; but so far there is no interference whatever with the progress of the work on the 2,000 or 2,135-feet levels of the Imperial.

THE LEAD MINES OF MISSOURI.

Mine La Motte.—This mining tract is 120 miles south of St. Louis, and includes 24,000 acres. It employs 500 men. The galena is found in what are known as disseminated veins in silurian limestone. Fifty veins or diggings are opened. The ore was first worked in the clay, and then followed under a shelving cap rock. The veins are from 6 inches to 3 feet thick, and contain from 5 to 20 per cent. of galena. The rock is blasted, sent to mill, crushed and separated. These veins are 50 and 100 feet wide, and follow the dip and bedding of the strata. The deepest work is from 50 to 75 feet. As these veins are followed under the cap they show a disposition to drop vertically and make at lower levels, going down, as it were, by a kind of step. Two nickel discoveries are on this tract. One is the sulphuret of nickel and yellow copper ore. This is a horizontal disseminated vein in limestone under 40 feet of cap rock. The other vein occurs in limestone, near its junction with porphyry. This vein is also disseminated, and contains lead, copper, cobalt and nickel, which is run in a regulus and sent to Swansea to be separated. The lead is smelted in Scotch hearths, and slags worked through a "slag hearth."

St. Jo. Mine.—This mine is 25 miles northwest of the La Motte, and is the sam kind of ore. The vein cropped is 100 feet wide at the outcrop, and worked under a shelving limestone up to 1863, at which time it was sold to a New York company, and organized as the St. Jo. Mining Company. The vein was followed, and was found deeper under 80 feet of cap rock by boring with diamond drill. The first work after the shaft was sunk was to drift laterally. After 100 feet had been driven out in different directions, sloping of the floor commenced, and the work has been carried down some 30 feet below the cap. The galena lies in floors in limestone, which is horizontal. At present 80 miners and 80 surface men, smelters, teamsters, etc., are employed.

Scotia Lead Mining Company, fifty miles south of St. Louis, own 560 acres; nominal capital $120,000; the new company bought the plant of Big River Mining Company; shaft 140 feet deep; pipe veins 10; the mines net about $1,000 per month.

Mammoth Mining Company adjoins the Scotia; nominal capital $500,00; own 1,2000 acres; are following what is known as the Mammoth Lead Vein, discovered in 1840. It is a pipe vein, running northwest and southeast; ore followed a chamber in the limestone and dipped at low angle.

Virginia Mine, fifty miles southwest of St. Louis; discovery was made in 1835; vein runs north and south and is vertical; country rock silurian limestone nearly horizontal; vein in being worked 1,000 feet linear and 2,000 feet vertical yielded 10,00,000 lb. of ore, equal to 7,500,000 lb. of lead. Was worked on royalty by individual miners; now organized as the Virginia Lead Mining Company; capital $1,000,000; shaft 200 feet deep, and will sink it deeper. This vein cuts through several beds of flint and is pinched in these; it carries more ore in the limestone. There is a question in economical geology about this vein, *i. e.*, whether it is a "gash vein" and limited in depth, or goes down indefinitely. The company work on the latter theory.

My observation inclines to the former, and that the ore will change to a floor, and veins run east and west.

Granby and Joplin.—These mines are in Southwest Missouri, 300 miles from St. Louis. The mines are from one to six and ten miles around Joplin. The ores are all worked on tribute. The operator leases the land, puts up a furnace and pumps, and miners sink shafts and sell the ore to the company. Say 3,000 miners in this part of Missouri. Daily lead product $3,000; zinc ore $1,000. This ore occurs in the form of a stratified vein, the lead and zinc being associated; carbonates and silicates of zinc near the surface and sulphurets below. The ore is in sub-carboniferous limestone. This limestone is tilted into basins with shallow dips—the vein system is duplicated in each basin. The present work is along the flanges of these basins, and where the horizon of the ore has been raised above the level of the water-courses, and ore is being gradually followed in the basins.

The gross production of lead in Missouri in 1876 will foot up to near $2,500,000. The zinc business has increased largely in the last three years. Lead and zinc mining in this State may be said to have barely commenced. New York and other eastern parties now draw a net revenue of over $300,000 from lead mines in this State, and probably no mining field on the continent now offers such inducements to mining parties as Missouri, and where such results can be reached with small capital on account of nearness of ores to the surface. There are large silver, lead, nickel and quartz districts in the Ozark Mountain region untouched.—From Correspondence in *Iron Age.*

NOTES.

THE EBERHARDT AND AURORA SILVER MINING COMPANY, of White Pine County, Nevada, gave a total bullion yield for 1876 of $556,000.

SIMPSON & DENNIS, coal dealers of Buffalo, N. Y., have made an assignment for the benefit of their creditors, to J. F. Moulton. Liabilities, $45,000.

THE MANHATTAN SILVER MINING COMPANY, of Austin, Nevada, produced during the year 1876, $1,220,660, being an average of about $102,400 per month. The mine pays a regular monthly dividend of $1 per share.

SPRINGHILL COAL MINING COMPANY, of New Brunswick. At the recent annual meeting of this company the total output of coal for 1876 was shown to be 70,069 tons. The profits of the year amounted to about $35,000, from which a dividend of 5 per cent. was declared, payable on the 28th inst.

CHARITY COAL.—The following award was made yesterday by the Commissioners of Charities and Correction to James H. Graham on a bid for supplying coal to the department: 1,800 tons at $3.96¼, for the district south of Fortieth street; 1,100 tons at $4.09, for the district north of Fortieth street to Harlem river, and 100 tons at $4.22, for the Twenty-third and Twenty-fourth wards.

CLOSE CONCENTRATION WITH THE FRUE VANNER run on Mr. Keen's ore at Boulder, Colorado:

7 tons containing 1¼ oz. au., per ton=8¾ oz. au. @ $20.67=$180.86
Concentrations 1750 lbs. containing 9 oz. au., per ton=$162.78
and 2¼ oz. ag., per ton= 2.19=$164.97
Loss $15.89

—equal to a saving of 91·20 + per cent.

ARTIFICIAL SEA IN AFRICA.—The proposal to make an artificial sea of Central Africa, and by this means to convert the desert into a means of communication between different parts of the Continent is again under discussion. Captain Rondaire, a French engineer, has made a survey of the locality, and has presented his report to the Academie des Sciences, stating that there is no obstacle whatever to the actual completion of the project. M. de Lesseps has heartily entered into the proposal, and as all opposition on the part of the Academy has been removed, there is some prospect that the work will be undertaken.—*The Engineer.*

JAMES RIVER AND KANAWHA CANAL.—A firm of contractors of large means, have offered to lease this canal for twenty years and to extend it, either by an extension of the canal, or by building a railroad from its present terminus at Buchanan, Va., to the Chesapeake & Ohio at Clifton Forge. The conditions required are that the Canal Company shall provide for the present floating debt; that they shall be paid for the work on the extension in third-mortgage bonds of the company; that the State of Virginia shall furnish them with convict labor and take bonds in payment, and that the Chesapeake & Ohio Railroad Company shall be required to give the canal through rates on all traffic exchanged at Clifton Forge. The offer is now being considered by a Committee of the Legislature.

LIABILITY OF CONTRACTORS FOR COAL.—An important decision was rendered in Philadelphia recently—the Kittaning Coal Company against John C. Scott & Sons. A contract was made in writing in the early part of 1874 by which the defendants were to take 50,000 tons of coal in monthly proportions from March 1st, 1874, to February 28th, 1875, notice to be given by defendants before the 25th of each month as to how much would be required the following month. Some 18,000 tons were delivered and paid for, and this suit was for damages sustained by plaintiff in consequence of the non-performance of the balance of the contract, which resulted in a verdict for plaintiff of $20,864.88.

COLOR BLINDNESS.—A St. Petersburg medical paper states that an examination of the employes of the Finland Railway has been made recently by Dr. L. Kzohn, with a view to test their capacity for distinguishing colors. It was found that forty-three persons were unable to distinguish red from green, and amongst whom were a station inspector and a pointsman who had been employed for eight years at the St. Petersburg station. Similar examinations have been made in Sweden and in Hungary. On one of the Swedish lines 10 per cent. of the employes were affected with color blindness to such a degree as to be unable to distinguish red, green or white from each other. In Hungary, out of 400 employes who were examined one only was found to be totally color blind, and 3 per cent. partially affected with this infirmity.—*The Engineer.*

FORMATION OF MINERALS.—Hartley has made further examinations of the liquids contained in mineral cavities. He finds that the liquid carbon dioxide present varies considerably—from 27.27° to 33.7° C.—in its critical point in different mineral specimens, often varying in different cavities in the same mineral specimen. The presence of this substance in sapphire and topaz leads him to the supposition that these minerals may have been formed by the action of aluminum fluoride or chloride upon calcium carbonate at high pressures, producing alumina and carbon dioxide. Where water is also present in the cavity it would seem that the reaction had taken place in presence of moisture. As to the diamond, the author thinks that this mineral is the result of the action of reducing agents upon very highly compressed carbon dioxide at temperatures above its critical point—a condition of things which suggests a new direction for speculation and experiment.—EDITOR'S SCIENTIFIC RECORD, in *Harper's Magazine for February.*

A NEW NICKEL MINE.—For a year or two past considerable excitement has prevailed in the several valleys of Clinton County, Pa., with regard to its mineral deposits. Marble of various degrees of excellence and shades of color, in considerable quantities, and large deposits of clay, suitable for pottery and earthenware, are known to exist, also considerable quantities of iron ore. Latterly, however, attention has been directed to a deposit in one of the valleys, within fourteen miles of this city and some four miles from a railway, which is found rich in nickel and cobalt, two of our most valuable minerals. Already a shaft twenty feet deep and seven feet in diameter has been sunk. A practical chemist has built a desulphurizing furnace in the village near the mine, and with the aid of this and a few common blacksmith forge fires has extracted nickel from the rock assaying as much as 17 per cent. of pure metal. The nickel-bearing rock is struck at a depth of only four feet, but in this rock to the depth of ten feet neither nickel nor cobalt is found in large paying quantities. From this point downward, however, the rock assays an average, we are assured, of about 7 per cent. At a depth of eleven feet a vein fifteen inches in thickness occurs which contains about 3 per cent. of cobalt and from four to seven per cent. of nickel; at a depth of fourteen feet a second vein, two feet in thickness occurs, containing nickel and silver, with scarcely a trace of iron, but a strong deposit of arsenite of nickel. From this point downwards the metal deposit grows apparently richer, not only to the bottom of the shaft but also through the six feet which Mr. Christopher, the geologist, has bored beyond the depth of the shaft. Many tests of the rock have been made and various results reached by the different chemists, some putting the assay as high as 13 per cent. When it is remembered that at the Gap nickel mines in Lancaster county, the only ones worked in this country, the yield is less than three per cent., it will at once be seen that the deposit in Clinton county is not only the richest in this country, but probably the richest in the world.

The rock is quite dark, almost black, in color, and was at first thought to be slate. Seams of a dark ash-colored deposit from one-fourth to an inch and a-half inch in thickness occur in this dark rock and these prove to be the richest deposit; though the whole rock is rich. It is estimated that the rock is not less than forty feet thick. —*Pottsville Miners' Journal.*

THE PRINCIPAL MINES AND BULLION YIELD OF MONTANA.—The bullion product of the Territory during 1876 may be stated as follows:

Gold dust and bars	$3,925,000	Silver lead ores	$250,000
Silver bullion	320,000		
Silver copper ores	180,000	Total	$4 675,000

According to Mr. W. A. Clark, Centennial Historian for the Territory, the bullion yield of Montana since the first discovery of mines in 1862 has been as follows:

1862	$600,000	1867	16,000,000	1872	7,000,000
1863	8,000,000	1868	15,000,000	1873	5,200,000
1864	16,000,000	1869	11,000,000	1874	4,000,000
1865	18,000,000	1870	9,000,000	1875	4,100,000
1866	17,000,000	1871	8,000,000		

Total bullion product about $145,000,000, including 1876.

Only a very small portion of this amount was silver, the most being gold dust ranging above 900 in fineness. The enormous production of the years 1864 to 1868 was due to the rich placer diggings found in the gulches of the Missouri head tributaries, and when these were exhausted to such an extent that it was necessary to combine the small claims into large ones, and employ capital to develop them on a large scale, the annual product decreased rapidly, and the outlook appeared dismal for Montana.

The principal producing mines are given in the following table:

Name.	Ore.	Depth.	Working Force.
Union	Gold	960 feet	40 men
Columbia	Gold	250 feet	12 do.
Pedro	Gold	220 feet	12 do.
Gregory	Silver-Lead	200 feet	15 do.
Rumley	Silver-Lead	200 feet	10 do.
Comet	Silver-Lead	150 feet	8 do.
Lexington, Butte	Silver	50 feet	5 do.
La Plata	Silver	100 feet	8 do.
Parrot	Silver-Copper	130 feet	6 do.
Burlington	Silver	100 feet	8 do.
Mountain	Silver-Copper	160 feet	8 do.
Speckled Trout	Silver	270 feet	25 do.
Hope	Silver	250 feet	30 do.

The reduction facilities of the Territory consist of eleven gold quartz mills, carrying an aggregate of 180 stamps; six silver reduction works (amalgamation) with a total capacity of 72 tons per day, and a 40-ton Krom concentration establishment. Excepting the last (which is just getting into shape), all have been running during the greater part of the year. At Helena is a 4-stack lead smelting works which has been fired up twice during the year, but with no success either time. At Jefferson, Kemp's mill (Washoe process) ran for the first half of the year, and was then burned down.—*Mining Review*, January 27.

PAY GOLD IN THE NEW SOUTH WALES COAL MEASURES.—Mr. C. S. Wilkinson, F.G.S., writes from the Geological Survey Office, Gulgong, under date November 25th, to the Mining Department as follows:—"I have the honor to acquaint you, for the information of the Honorable the Minister for Mines, that, during my examination of the Tallawang Gold-field Reserve, I observed the important fact that the gold found in the tertiary alluvial deposits at the old Old Tallawang and Clough's Gully diggings has chiefly been derived from conglomerates in the coal measures. These conglomerates are associated with beds of sandstone and shales containing the fossil plant characteristic of our coal measures, the Glossopteris. At Clough's Gully the conglomerate *in situ* is being worked, and yields from 1 dwt. to 15 dwts. of gold per ton, and nuggets weighing up to 5 ozs. have been obtained from it. Several hundreds of tons of the conglomerate (locally termed cement) have been crushed; but as the yield is said to have been 'patchy' or variable, work has been stopped, and the ground is now held under lease. There are, however, a few miners still at work in the adjacent claims, and I took the opportunity of purchasing from one of them a sample, weiging 1 oz., of the gold, which he was crushing by hand out of the hard cement. The gold is coarse in size, remarkably scaly, and waterworn. I hope to secure, for the Museum of Mines, some samples of the conglomerate containing gold. Mr. R. M Kay, of Clough's Gully, gave me one small piece showing coarse gold. This is the first time that gold has been noticed to occur in payable quantity in the coal measures in the colony; and it is not unworthy of remark that we here possess one of the most ancient auriferous 'alluvial' deposits in the world. It affords me much pleasure in thus adding the above testimony to the researches of the Rev. W. B. Clarke, M.A., F.R.S., who many years ago ascertained the occurrence of gold in minute quantity in the Hawkesbury Rocks, at the North Shore, Sydney, at Govett's Leap, and in the conglomerates of the coal measures in the Southern district, in which latter formation the late Sir Thomas Mitchell also found a spec of gold in a pebble of quartz, and he communicated his interesting discovery in a letter to the Rev. W. B. Clarke, in June, 1855 (see 'Southern Goldfields' and 'Discovery of Gold in Australia'). Gold is also stated to occur in the coal measures at Peak Downs in Queensland; near Hobart Town, in Tasmania; and in New Zealand. But apart from the scientific interest attaching to the subject of the geological age of auriferous alluvia, the fact that gold in payable quantity has been proved to exist in the coal measures is one of considerable importance; for it may lead not only to the working of some of the conglomerate beds at the old Tallawang diggings, but also to the discovery of other similar auriferous patches which no doubt occur in the Tallawang gold-fields and in other parts of the colony where the same geological features are presented. You will be gratified to know that, amongst a collection of the tertiary vegetable fossils which I lately submitted to Baron Ferd. von Müller, C.M.G., M.D., F.R.S., that distinguished botanist has discovered no less than seven genera and nine species of plants new to science. Most of these fossil fruits were found beneath basalt, at a depth of 160 feet from the surface in No. 23 claim, 'Black Lead,' Gulgong. The Baron has generously afforded me his diagnosis and descriptions of these fossils, which will form a most valuable contribution to the scientific elucidation of the geology of the tertiary period in Australia. While referring to fossils from the gold drifts, I may mention that when lately inspecting the Gulgong goldfields, in company with the Honorable the Minister for Mines, and Mr. Warden T. A. Brown, I obtained a fine specimen of the fresh water *Unio* from one of the deep leads. This relic of the past is specially interesting, as being the first fossil shell of the kind yet discovered in the pliocene tertiary gold drifts."—*Sydney Herald*, Dec. 2d, 1876.

STATISTICS OF COAL PRODUCTION.

This is the only Report published that gives full and accurate returns of the production of our Anthracite mines.

Comparative Statement for the week ending Feb. 3.

Tons of 2,240 lb.	1877. Week.	1877. Year.*	1876. Week.	1876. Year.*
Wyoming Region.				
D. and H. Canal Co.	36,137	163,7 7	58,361	176,908
D. L. and W. RR. Co.	38,619	171,9 2	36,466	187,350
Penn. Coal Co	17,709	75,341	16,220	109,546
L. V. RR. Co	15,019	83,020	18,187	109,173
P. and N. Y. RR. Co.	1,033	3,451	798	3,776
C. RR. of N. J	10,268	84,747	17,692	102,649
	118,785	582,188	147,724	689,402
Lehigh Region.				
L. V. RR. Co	47,562	186,253	36,455	176,256
C. RR. of N. J	13,267	57,132	16,320	127,906
D. H. and W. B. RR.	416	416	116	2,853
	61,245	243,801	52,891	307,015
Schuylkill Region.				
P. and R. R. RR. Co	69,364	332,644	76,374	222,350
Shamokin & Lykens Val.	4,458	33,940	8,194	22,806
	73,822	366,584	84,568	243,156
Sullivan Region.				
Sul. and Erie RR. Co.	227	1,360	1,376	5,659
Total	254,079	1,193,933	286,559	1,245,232
Increase	—	—	—	—
Decrease	32,480	51,299	—	—

* Year beginning January 1st.

The above table does not include the amount of coal consumed and sold at the mines, which is about five per cent. of the whole production.

The decrease of shipments of Cumberland Coal over the Cumberland Branch, and Cumberland and Piedmont Railroads amounts to 31,349 tons, as compared with the corresponding period in 1876.

Belvidere Delaware RR. report.	Week.	Year 1877.	Year 1876.
Receipts of coal at Coal Port (Trenton)	—	—	4,613
" " " South Amboy	6,724	26,448	77,000
Shipments at Coal Port (Trenton)	—	—	—
" South Amboy	7,331	38,642	32,682

Receipts of Coal at Boston, for the week ending Feb. 2, and years from Jan. 1.

Tons of 2,240 lb.	1877. Week.	1877. Year.	1876. Week.	1876. Year.
From				
Alexandria and Georgetown	—	—	—	2,150
Philadelphia	4,400	14,320	1,500	12,200
Baltimore	—	2,440	3,484	8,746
Other places	8,968	13,806	4,845	16,537
Great Britain	—	610	—	525
Nova Scotia	—	—	—	199
Total	13,368	31,176	9,829	40,357

Perth Amboy business:

	Tons.
Received for the week	16 917
Shipped for the week	13,085
On hand Feb. 3	136,741

The Production of Bituminous Coal for the week ending Feb. 3 was as follows:

Tons of 2,000 lb., except where otherwise designated.

Cumberland Region, Md.	Week, Tons.	Year, Tons.
Tons of 2,240 lb	13,747	52,432
Barclay Region, Pa.		
Barclay RR., tons of 2240 lb	9,837	38,892
Broad Top Region, Pa.		
Huntingdon and Broad Top RR	1,670	11,678
*East Broad Top	541	541
Clearfield Region, Pa.		
*Snow Shoe	917	917
*Tyrone and Clearfield	15,253	15,253
Allegheny Region, Pa.		
*Pennsylvania RR	3,035	3,035
Pittsburgh Region, Pa.		
*West Penn. RR	3,534	3,534
*Southwest Penn. RR	1,274	1,274
*Penn. & Westmoreland gas coal, Pa. RR.	18,530	18,530
*Pennsylvania RR	4,973	4,973

* For the week ending Jan. 7.

The Production of Coke for the week ending Jan. 7.

Tons of 2000 lb.	Week.	Year.
West Penn. RR	2,104	2 104
Southwest Penn. RR	9,829	9,829
Penn. & Westmoreland Region, Penn. RR.	1,529	1,529
Pittsburgh, Penn. RR	3,869	3,869
Total	17,331	17,331

COAL TRADE REVIEW.

NEW YORK, FRIDAY EVENING, Feb. 9, 1877.

Anthracite.

The demand for anthracite coal continues to be very limited, being even less than a few weeks ago. One cause for this is the very mild weather, which has greatly reduced the consumption of domestic sizes, but a greater cause appears to come from a belief among buyers that the "bottom" in prices has not even yet been reached, though they are now lower than ever before in this market. This belief is not illfounded, although it is not probable that a large quantity of coal can be purchased at a lower range of prices during the coming season. The existing circular rates are ruinous to the mining companies, yet even these prices are being shaded. In the efforts of some of the weaker companies ot prolong the day of reckoning, there may be a short period during which coal may be sold at lower rates than now rule; but if some of the roads go into the hands of receivers it will be difficult, if not impossible, to meet the current expenses even at the rates now prevailing; for there is a price at which even a receiver cannot run a road.

During the time navigation was interrupted by ice, and coastwise freights were very high, it was predicted that when the harbors became more free, and freights were reduced, there would be a better demand for coal, but now with these restrictions removed trade does not improve.

Messrs. Ward & Olyphant, have produced a sensation in the trade by issuing a circular quoting Lackawanna Coal at retail at yard, per ton of 2,000 lb., as follows:

Grate and egg	$3 25
Stove or range	4 00
Chestnut	3 90

The Pennsylvania Coal Company's prices for Pittston coal, which were considered very low, are as follows:

Grate, egg and chestnut	$3 90
Stove	4 20

It will be observed that the circular for Lackawanna coal is 65 cents per ton lower than that of Pittston on egg and grate sizes, and 20 cents per ton lower on stove, while chestnut is the same in both circulars. It is said, however, that the Pittston prices are being shaded. These prices should attract consumers to the yards of these companies and prohibit the ordinary retail dealers doing business. With this state of affairs it is not strange that those companies dependent on the regular trade for a demand should find business quiet. The retail prices asked for egg and grate coal are so ruinously low that we do not believe that coal can be bought for less than at present this year. The margin left for handling the coal is the difference between a net and gross ton and upon the low basis of prices, this is ruinous to the retail as well as the mining department.

The great event of the week, however, was the meeting of the stockholders of the New Jersey Central Railroad Company, on Wednesday.

The proceedings of the meeting of Wednesday have received such publicity through the daily press that an extended report on our part is quite unnecessary. The object of the meeting was to induce the stockholders to subscribe to $3,000,000 of the company's certificates of indebtedness, guaranteed by $5,000,000 of the bonds of the Lehigh and Wilkes-Barre Coal Company. The main feature of this meeting was the address of the President, in which he stated he had "certain information that a new combination would be effected during the present week." Subsequent investigations have failed to confirm this statement, or to change in any way the opinions we have so frequently expressed upon this subject in these columns. We see no indications of a recombination, and more than this, we do not believe it can be effected, or would be desirable if it could.

The ills which afflict the Central and some of the other coal roads are too deep to be reached by any such expedient, and the conviction becomes more and more firm that a fundamental organization will alone bring these concerns into a condition of solvency. No one can regret more than we do the losses that have already and must inevitably shortly fall upon a large number of confiding stockholders, and we would find it more agreeable "to prophesy smooth things" and encourage those who try to believe that things are not quite as bad as they seem, but the ENGINEERING AND MINING JOURNAL bases its opinions upon a careful study of the elements of success or failure in the great industries on which the prosperity of the companies depends rather than upon the desires or hopes of interested stockholders; and we fail to see how the proposed remedies of *more bonds* or of re-combination can effect a cure, or even carry the patient through the crisis into a lingering doubtful convalescence. We can see no permanent prosperity in the coal trade while these disturbing elements exist.

The consumption of coal stimulated by these unprecedentedly low prices will increase, and doubtless in time the companies will reap some return for present losses, but in the meantime the original stockholders will probably lose their investments, and possibly some of the bondholders will suffer also. This is not a condition of things that can be remedied by bluster and unsupported statements, and the course which Mr. Knight adopted of ignoring or misstating the condition of the company, and his confident assertion that a "Combination" (in which he places all his hopes for safety) would be made within a week, were eminently calculated to destroy confidence in his management; and it clearly demonstrated his ignorance of the difficulties attending the organization, to say nothing of those in maintaining a coal combination. On the whole the management of Mr. Knight has not thus far proved a success, and it seems to be lacking in some of its essential elements.

The New York *Tribune* which understands the coal trade better, and whose financial articles are the most able of any of our city dailies, in to-day's issue says:

THURSDAY, Feb. 8—P. M.

"It is a noticeable feature in the talk of the officials of the coal companies that they ascribe present difficulties and financial embarrassments to the "great depression in the coal trade." At the stockholders of Jersey Central meeting held yesterday, President Knight dwelt upon this subject and pictured the bright future to be realized by an advance of $1 per ton for coal to be brought about by a Combination, of which no other coal official could be found who dreamed of such a thing as possible. Now it may be well to remember that when in April, 1876, the *Tribune* began to show the condition of the respective coal companies, the average price of coal was not $1 but $2 per ton higher than now; that the Combination only ended late in August, through the financial necessities of the respective companies when the time had arrived that each company was forced to look out for the interest of number one. So when officials talk about the effect of a 'depression' they should give a report of business since September 1, instead of for the whole year of 1876. The coal companies were fast going to the bad with coal at over $5 per ton. Delaware, Lackawanna and Western earned, for the first six months of 1876, less than 1 per cent on its stock, although it paid out 5 per cent. in dividends. Consequently it now permits supply bills payable December 1, to remain unpaid for over 60 days after being due. Yet it is regarded as one of the highly respectable stocks, as was Michigan Central under the same management at 70@80. The fact is easy of demonstration that neither the Delaware, Lakawanna and Western nor Delaware and Hudson, with their immense rental charges, can earn dividends upon their stocks with coal at $5 per ton, unless the consumption is nearly doubled. Respectability is for a time holding these securities above Reading and Jersey Central; but without the intervention of a miracle, each of them is certain to find the same level."

The production last week was 254,079 tons, as against 245,215 tons for the previous week, and 286,559 tons for the corresponding week of 1876. The production since Jan. 1 has been 1,193,933 tons as against 1,245,232 for the like period of last year, showing a falling off this year of 51,299 tons. With even this light production there is a large accumulation of coal at the shipping ports.

Bituminous.

During the week a contract for 3,000 tons of Clearfield coal for shipment to Cuba has been closed. This makes 8,000 tons reported in two weeks, the 5,000 tons reported last week not having been on an old contract as inferred by one of our contemporaries. The sale of Newcastle coal reported in our last has attracted considerable attention and there are indications that further business will be done on the same basis. Cumberland coal is very quiet although shipments can now be made from both Georgetown and Boston. The high price asked for this coal prevents it competing in many markets with Clearfield and anthracite coals.

A movement to reduce miners' wages to 50c. per ton in the Cumberland region has been inaugurated under the auspices of the Baltimore and Ohio Railroad Company. This is certainly a move in the right direction, but it will fail to meet the requirements of the case, and before the season has been far advanced it will be found necessary to reduce wages to a price no higher than 40c. per ton for mining, and quite probably to a point even lower than this.

The Cumberland *News*, of Feb. 6, says: "In this connection we may mention that the Baltimore and Ohio Railroad Company has ceased entirely to draw fuel supply from our region. This is a heavy loss to us. The company say they can buy to better advantage in the Monongahela, Keystone or Clarksburg region to all of which they have access. Vice President King is credited with the remark that our coal is too high for his company to buy; that they will make no more carrying concessions to the trade until the production is cheapened; that they paid out last year about one hundred thousand dollars in freight drawbacks, all of which was spent here, and that no further drawbacks will be given under existing circumstances."

GAS COALS.—The producers of gas coal are quite actively at work to secure business for the coming season. Neither freight rates nor prices for these coals have yet been established for 1877. Some business is anticipated at an early day, but there are indications that the regular contracts will be small as compared with previous years—only sufficient to establish prices.

New York.

Wholesale Prices of Anthracite Coal f.o.b. at the Tide Water Shipping Ports per ton of 2240 lb.

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
Wyoming Coals.						
‡Lackawanna and Scranton at Hoboken and Weehawken	2 75	2 75	2 75	2 90	3 60	3 35
Wilkesbarre at Port Johnston.	2 85	2 85	2 85	3 00	3 65	3 25
Plymouth, R. A.,	....	....	2 85	3 00	3 75	3 35
Susque. Coal Co., (S.H.Brown & Co.,) at Amboy	2 85	2 85	2 85	3 00	3 65	3 25
Kingston at Hoboken	2 75	2 75	2 75	2 90	3 60	3 10
Pittston at Weehawken:						
A. S. Swords	2 90	2 90	2 90	3 00	3 55	3 30
Penn. Coal Co	3 00	3 00	3 00	3 10	3 60	3 35
Lehigh Coals.						
Old Company at Port Johnston	3 75	....	3 25	3 25	3 75	3 25
Old Company's Room Run "	3 75	....	3 25	3 25	3 75	3 25
Sugar Loaf, Hobok. & Amb. "	3 75	...	3 25	3 25	3 75	3 50
Lehigh Coal Exchange "	3 75	....	3 25	3 25	3 75	3 50
Honey Brook Lehigh	2 75	....	3 25	3 25	3 75	3 25
Beaver Meadow at South Amboy	3 75	....	3 25	3 25	3 75	3 25
Mount Pleasant at Hoboken	3 50	....	3 15	3 15	3 50	3 30
Cross Creek at Elizabethport	3 75	....	3 25	3 25	3 75	3 25
Schuylkill Coals at South Amboy.						
Schuylkill white ash	2 75	2 75	2 75	2 90	3 60	3 25
Schuylkill red ash	....	....	....	....	....	....
Lorberry	....	....	....	....	....	....
Lykens Valley	....	....	....	....	....	....

‡ Boats towed by the D. & H. C. Co. at its expense to and from New York harbor.

Per ton.

Freight from Hoboken and Weehawken to New York .35@40c.
" " Elizabethport & Port Johnston to N. Y. 35@40c.
" " South Amboy to New York .35@40c.

Freight by the boats of the companies from Hoboken, Port Johnston, Weehawken, South Amboy and Perth Amboy to New York City and vicinity 50c.

Pittston coal at New York delivered by Penn. Coal Co.'s boats 40c. per ton additional.

Lackawanna coal delivered to carts in New York or Brooklyn, 50 cents per ton additional.

Wholesale Prices of Bituminous Coal.

Domestic Gas Coals.

Per ton of 2240 lb.	At the Shipping Ports.	Alongside in New York.
Westmoreland and Penn. at Greenwich, Philadelphia	$4 70	$6 00
" " at S. Amboy	5 50	6 00
Red Bank Cannel Pa. at Philadelphia	8 00	8 50
Youghiogheny, Waverly Co., at Balt	4 25	5 65
Despard, West Va.	4 50	6 00
Murphy Run, West Va., at Baltimore	4 50	5 85
Fairmount, West Va., " "	4 40	5 70
Newburgh Orrel, Md. " "	4 50	6 00
Cannelton Cannel, W. Va	....	10 00
" Splint, " at Richmond.	6 00	7 00
" Gas Coal at Richmond.	4 15	5 65
Peytona Cannel W. Va at Richmond	....	10 00

Manufacturing and Steam Coals.

Cumberland at Georgetown and Alexandria, Va	3 50@3 75	5 20
Cumberland, at Baltimore	3 75@3 90	5 00
Clearfield f.o.b. Canton, Baltimore	3 50@....	5 45

Pennsylvania Semi-Bituminous Coals

At the mines, per 2,000 lb., 90c.@$1 f.o.b. at Greenwich, Phila., for Eastern and foreign shipments, per 2240 lb. $3 25@3 35 for Sound ports, 3 50@3 65, f.o.b., at South Amboy, N. J., per 2,240 lb., $4 10@4 75. Discharged, in New York, per 2,240 lb., $5 00 @5 25.

Foreign Gas Coals.

	Sterling.	Am. currency
Newcastle, at Newcastle-on-Tyne	9/6@11/	6 50@ 7 00
Liverpool House Orrel, at Liverpool	26/	13 00
Ince Hall Cannel "	42/	18 00
" Gas Cannel "	28/	13@14
Scotch Gas Cannel, at Glasgow, nominal,	25/	7 50
	Gold.	
Block House, at Cow Bay, N. S	2 00	4 75
Caledonia, at Port Caledonia	1 50	4 25
Glace Bay, at Glace Bay	1 50	4 25
Lingan, at Lingan Bay	1 75	....
Sydney, International and Reserve mines, at Sydney	2 00	5 50
Pictou, Albion & Vale mines, at Pictou.	2 25	5 75

Retail Prices in New York.

Anthracite.

Per 2000 lb.	Grate and Egg.	Stove.	Chestnut.
Pittston coal, in yard	$3 90	$4 20	$3 90
Lackawanna coal, in yard	3 25	4 00	3 90
Wilkes-Barre, delivered	5 00	5 30	4 60
Lehigh & Locust Mountain, del'd	5 50	5 50	5 00
Schuylkill Red Ash, del'd	5 25	5 50	4 75

The Cost of delivery for Pittston and Lackawanna coal ranges from 4c cts. to $1 10 per ton, according to distance from the yard.

Bituminous.

Liverpool House Orrel, delivered, per ton of 2000 lb	$18 00
Liverpool House Cannel " " "	18 00
American " " "	11 00
Cannelton Block, or splint, " " "	10 00
American Orrel " " "	11@14
Red Bank Cannel " " "	10 00
Cumberland " " "	7 00

Boston, Mass. Feb. 3, 1877.

Coal is flat. Concessions continue to be made, and the market closes weak and lower. Not a single stimulating influence has been exerted on the market. Rumors of receivers for coal carrying roads continue rife. The warm weather has opened up all the ports, and freights are dull and declining. Soft coals are much steadier than anthracite.

We quote Boston wholesale price as follows:

Anthracite, broken	4 75@5 25	Cannel, English	14 00@15 00
do egg	4 75@5 25	Do. Buckeye	10 00
do stove	5 50@6 00	Lingan	4 75@5 00
Cumberland	....	Pictou	5 50
Clearfield	5 75	Penn	6 50
Westmoreland	6 00	Youghiogheny	5 50@6 25
Caledonia	4 75@5 00		

—*Commercial Bulletin.*

Buffalo, N. Y. Feb. 9, 1877.

Specially reported by Messrs. PALEN & BURNS, 246 Washington street.

By Telegraph.

No change in prices, market inactive, sales light.

ANTHRACITE.

	To Dealers. On Car or Boat.	In Yard, screened.	To Consumers. Delivered at retail.
Grate	$4 55	$4 75	$5 80
Egg	4 65	4 85	5 90
Stove	5 15	5 35	6 40
Chestnut	5 15	5 35	6 40

BITUMINOUS.

	car lots.	Retail, delivered.
Brier Hill, lump	$4 10	$6 00
Brookfield, "	4 15	6 00
Screened nut, Brookfield	3 00	4 50
Nut and slack, "	2 75	3 50
Reynoldsvile, lump	3 50	4 50
Buck Eye (Ohio), lump	3 50	4 50
Cannel	5 25	7 00
Connellsville Coke	5 10	....

Louisville, Ky. Feb. 6, 1877.

Specially reported by Messrs. BYRNE & SPEED.

WHOLESALE.

	per bushel		per bushel
Pittsburg	6½c.	Pine Hill	—
Raymond City	6½c.	Kentucky	7c.

RETAIL.

	per bushel		per bushel
Pittsburgh	10c.	Peytona Cannel	18c.
Raymond City	10c.	Buckeye "	
Pine Hill	13c.	City-made Coke	8c.
Kentucky	9c.	Anth., per ton, $10 00 to 10 50	
Screened Pittsburgh per load			$3 50
Screened Raymond City			2 50
Pine Hill (Kentucky)			2 25
Cannel			4 50
City-made Coke			4 00

New Orleans, La. Feb. 5, 1876.

Specially Reported by Messrs. C. A. MILTENBERGER & Co.

Prices in the coal market have advanced considerably since our last, but the rivers being now open, and a limited supply being en route, prices have settled again, somewhat. We quote:

Pittsburg coal, wholesale, by boat-load, per bbl	50c.
" steamboats, per bbl	75c.
" to manufacturers, per bbl	75c.
" to families	$1 00
" shipments, per hhd	$8 00
Anthracite, wholesale, per ton	7@8 00
" retail, "	12 00
Virginia Cannel, retail, per bbl	1 25
Scotch " "	....
Mt. Carbon, wholesale, per bbl	...
" " retail, "	....
St. Bernard wholesale, per bbl	—c.
" steamboat	50c.
" retail "	70c.

Richmond, Va. Feb. 6, 1877.

Specially reported by S. H. HAWES, Dealer in Coal.

Per ton of 2240 lb., f.o.b.

Kanawha Cannel	$9 00	New River Bituminous	$4 40
Coalburgh Splint	5 70	Clover Hill Coal	3 50
Lewiston "	5 70	James River Bitum	3 30
Kanawha Gas coal	4 90	" " Carbonite	5 00

San Francisco, Cal.

From the *Commercial Herald*, Feb. 1, 1877.

§ The receipts from Northern coast mines continue liberal, and as imports of Australian and other foreign promise to be light for some time to come, there would seem to be a better show for the home product. We quote Wallsend at $9; Seattle, 18; Bellingham Bay and Coos Bay, $8; Cumberland in casks, $16@17, same in bulk, ex ship, $14@15; Anthracite $14@16, latter rate for Lehigh; Scotch and English steam $7 50@8.

Rates of Transportation on Anthracite Coal to Tide Ports.

PHILADELPHIA AND READING RAILROAD CO.
General Office, 227 South Fourth Street.
PHILADELPHIA, Dec. 18, 1876.

From and after this date, and until further notice, shipments of anthracite coal can be made through by rail to South Amboy, via Richmond Junction, at the following rates, per ton of 2,240 pounds, in company's car:

From Schuylkill Haven	$1 52
" Tamaqua	1 67
" Pine Grove	1 72
" Port Richmond	65

An additional charge of twenty-five cents per ton will be made on chestnut and pea coal, unless the shipper signs the usual release.

The release now in force will apply to this trade.

(By order of the Board of Managers),
DAVID BROWN, Secretary.

Lehigh and Wyoming Coals.

per ton of 2240 lb.

	From Penn Haven.	From Mauch Chunk.	From Hazleton*	From Upper Lehigh.	From Ashley and Sugar Notch.
To ‡ Newark, N. J. (117 miles), via Central Railroad of New Jersey	1 62	1 48	2 04	1 95	2 18
‡ Mauch Chunk, Pa., via Central Railroad of N. J.	14	...	58	49	72
‡ Philipsburg, N. J., (46 miles)	70	56	1 00	91	1 14
Elizabethp't, (114 m.) Pt. Johns., Hoboken & South Amboy, N. J., shipping and wharfage 35c. add.	1 26	1 12	1 68	1 59	1 82
High Bridge, N. J.	1 95	1 75	2 43	2 34	2 52
Elizabeth, Cranford, Westfield & Elizabethport, for consumption,	1 89	1 75	2 31	2 22	2 45
Jersey City, N. J., (121 miles) and New York, via L. V. RR	1 59	1 48	2 01	1 92	2 15
From *Mauch Chunk* to *New York* (121 miles). (towing limits) and Jersey City† via Lehigh Valley RR.					$1 48
From *Mauch Chunk* to *Philadelphia* (93 m.) via L. V. and L. and S. RR. and North Penn. RR.					1 25
From *Mauch Chunk* to *Perth Amboy*, tide coal, $1.12, local					$1 52
From *Penn Haven* to *Perth Amboy*, tide coal					1 26
For way points between *Mauch Chunk* and *Phillipsburg*, on the New Jersey Railroads					1 00
From *Phillipsburg, N. J.* to *Hoboken* (84 m.) for shipment via Delaware, Lackawanna and Western RR., Morris and Essex Division					65
From *Phillipsburg, N. J.*, to *Newark* (75 m.) via Delaware, Lackawanna and Western RR.					1 01

** Rates on line coal from Hazleton are 10c. per ton above these figures.

‡ The cost of unloading is to be added to these rates. No charge less than 40c. per ton will be made for any distance. Tolls from Mauch Chunk to Phillipsburg for way points will be $1 15 per ton.

† Transportation on Coal destined for re-shipment from this point from boat to boat is 20c. less, if discharged upon the wharf 1.c. less than the above rate; if dumped into coal pockets, 10c. additional.

The distances in the above table are Computed from *Mauch Chunk*. From *Ashley* to *Mauch Chunk* the distance is 51 miles, and from *upper Lehigh*, 33 miles. From *Hazleton* 24 miles, and from *Penn Haven* 8 miles.

From *Wilkes-Barre* to *Perth Amboy* via the Lehigh Valley Railroad Company, the distance is 101 miles, and from *Mauch Chunk* it amounts to 106 miles.

Geneva, Ithaca and Sayre Railroad.—The rates of transportation on coal from Coxton, Pa., per ton of 2,240 lb., from and after the first of November, will be as follows:

To East Waverly, N. Y.	$1 75
" Ithaca, and for C. Lake RR. (local)	1 64
" " for C. Lake RR., and via Erie Canal (shipment)	1 57
" To Van Etten, for U. I. and E. RR.	1 61
"Geneva (local) for S. P. and S. and L. O. S. Railroads, and for N. Y. C. and H. R. RR., except Auburn and Cayuga	2 06
To Geneva, for Buffalo and Towanda	1 87
" " " Rochester and Charlotte	2 01
" " " Auburn and Cayuga	2 50
Total rate to Buffalo	3 11
" " " Rochester	2 78

REGULATIONS.

A charge of fifteen cents per ton will be collected of each consignee on all coal not unloaded within twenty-four hours after its arrival, and an additional charge of ten cents per ton for every twenty-four thereafter; Sundays and legal holidays excepted.

No allowance will be made for coal lost from cars on account of broken doors or other defects existing when the cars are loaded.

Seventeen cents per ton will be charged, at Ithaca Docks, for shipping Coal direct from cars to vessels, and 12 cents per ton additional from stock, making a total charge on what is shipped from stock of 29 cents per ton.

All freights will be collected weekly, by drafts on shippers, from Coxton to destination.

Freights

Representing the latest actual charters up to Feb. 9, 1877.
Per Ton of 2240 lb.

Ports.	From Philadelphia.	From Baltimore.	From Georgetown.	From Elizabethport, Port Johnson, South Amboy, Hoboken and Weehawken.
Augusta, Me	....	....	....	....
Albany	....	....	....	....
Alexandria	....	....	....	....
Amesbury, Mass	....	....	....	....
Bangor, Me	....	....	....	....
Bath, Me	....	....	....	....
Baltimore	....	....	....	....
Boston, Mass	....	2 50	....	1.50-1.75
Bridgeport, Ct	....	2 00	....	....
Bristol, R. I.	....	....	....	....
Cambridgeport, Mass.	....	....	....	....
Derby	....	....	....	....
Dighton	....	....	....	....
East Cambridge	....	....	....	....
Fall River	....	2 00	....	....
Hackensack	....	....	....	....
Hallowell, Me.	....	....	....	....
Hartford	....	....	....	....
Hoboken	....	....	....	35
Hudson	....	....	....	....
Jersey City	....	....	....	35
Lynn, Mass	....	....	....	....
Middletown	....	....	....	....
Mystic	....	....	....	....
Newark	....	....	....	....
New Bedford	....	2 10	....	....
Newburyport	....	....	....	....
New Haven	....	2 00	....	7c@75
New London	....	2 00	....	....
Newport	....	....	....	....
New York	....	1 80	....	35
Norfolk	....	...	....	....
Norwalk	....	2 00	....	....
Norwich	....	2 10	....	....
Pawtucket	....	....	....	....
Philadelphia	....	....	....	....
Portland	....	2 50	....	....
Portsmouth, N. H.	....	2 75	....	....
Providence	....	2 00	....	10@ 10
Poughkeepsie, N. Y.	....	....	....	....
Rockport	....	....	....	....
Saco	....	....	....	....
Sag Harbor	....	....	....	....
Salem, Mass	....	2 50	....	....
Salisbury Pt., Mass.	....	....	....	....
Stamford	....	....	....	....
Stonington	....	....	....	....
Taunton	....	....	....	....
Troy	....	....	....	....
Warren, R. I.	....	....	....	....
Wareham	....	....	....	....
Washington	....	....	....	....
Weymouth	....	....	....	....
Wilmington, Del	....	....	....	....

* And discharging and towing. † And discharging. ‡ And towing. § 30. per bridge extra.

IRON MARKET REVIEW.

New York.

FRIDAY EVENING, Feb. 9, 1877.

American Pig.—We are reported sales of about 12,000 tons of various brands of pig iron, including about 8,000 tons of Thomas iron, at $20 for No. 1 foundry; $19 for No. 2 foundry; and $18 for forge. Some of the other companies claim to be doing no business worthy of note and upon the whole the trade bears a very discouraging appearance. The greatest demand appears to have been from pipe makers, other consumers ordering but very little.

Scotch Pig is very quiet and unchanged. Quotations are as follows: Coltness $28@$28.50; Eglinton. $25.75; and Glengarnock, $27.

Rails.—We are reported a sale of 10,000 tons of iron rails for Texas delivery, said to be on two year's time. We are also reported sales of steel and iron rails aggregating an additional 10,000 tons. We continue to quote steel rails at mills at $48@$52 and iron at $33@38.

Old Rails.—We are reported a sale of 2,000 tons said to be at $19.50. We quote $19.50@$20.

Scrap.—We quote a sale of 175 tons of No. 1 wrought said to be at $26 50; also 200 tons of old car wheels on private terms. We quote No. 1 wrought, scrap at $26 @$27.

Baltimore, Md. Feb. 7, 1877.

Specially reported by Messrs. R. C. HOFFMAN & Co.

There is no special change in our pig iron market from last report. Stocks are being gradually reduced, and prices firm. We quote:

Baltimore Charcoal....$29@32	Mottled and White..16@17 00
Virginia Charcoal..... 28@32	CharcoalC.B.Blooms 60@62 00
Anthracite No. 1..... 22@23	" " Belletts 65@67 00
" No. 2..... 20@22	Refined Blooms..... 50@55 00
Anthracite No. 3...$19@20 00	

Boston, Mass. Feb. 3, 1877.

PIG is very quiet, though prices are maintained a little better than a few weeks ago. Sales of pig have been made in New York on a basis of $20 for No. 1. The Allentown company sold 5,000 tons No. 1 for delivery in Boston at a price equivalent to even less than $20 at Hoboken. We quote $24@24 50 for No. 1, $23@23 50 for No. 2, and $22 50@23 50 for gray forge. Scotch pig is quiet and unchanged, with a downward tendency, based on the decline abroad and on the lower gold premium.

BAR is very quiet, quoting $47@48 for refined and $38@39 for common. The Central Vermont invites proposals for steel rails, offering in payment preferred payments.

Buffalo, N. Y. Feb. 9, 1877.

Specially reported by Messrs. PALEN & BURNS, 246 Washington Street.

By Telegraph.

No change in prices, market inactive, sales light.

Prices per Gross ton at Buffalo.

ANTHRACITE.

No. 1 Foundry	$23 50.—4 mos.
B 1 "	22 00.—4 "
No. 2 "	21 50.—4 "
Gray Forge	21 00.—4 "

LAKE SUPERIOR CHARCOAL IRONS.

No. 1	$26 75.—4 mos.
No. 2	25 75.—4 "
No 3	25 25.—4 "
No. 4	25 25.—4 "
No. 5	25 75.—4 "
No. 6	26 25.—4 "

AMERICAN SCOTCH—CHERRY VALLEY.

No. 1	$25 50.—4 mos.
B 1	24 00.—4 "
No. 2	23 00.—4 "

Chattanooga, Tenn. Feb. 5, 1877.

Specially reported by J. F. JAMES, pig iron broker, etc., 233 Market Street.

The better feeling that existed at last report has given place once more to depression, as business during the past week has been very limited and prices without material change. There is little life or animation in the entire trade South Inquiries from the West are frequent for cold short metals. Stocks not being heavy, the furnacemen hold at from $2 to $3 per ton above obtainable prices in that direction, and hence no sales of importance to note. Prices remain unchanged, as below.

Tenn. Ala. and Ga. Charcoal, No. 1 foundry	$20@ 21
" " " " No. 2 foundry	18@ 19
" " " " gray forge	16@ 17
" and Georgia coke, No. 1 foundry	18@ 19
" " " No. 2 foundry	17@ 18
" " " gray forge	15@ 16
White and Mottled	14@ 15
Tennessee and Georgia cold-blast car wheel	21@ 23
" " gray forge	16@ 18
Old Rails	cash 19@ 20
Cast Scrap	" 10
Wrought Scrap, No. 1	" 18@ —
" " " 2	" 12@ —

Cincinnati, Ohio. Feb. 6, 1877.

Specially reported by Messrs. TRABER & AUBERY, commission merchants for the sale of pig iron, blooms, ore, etc.

We have no change to report in our pig iron market; prices are firm at quotations:

CHARCOAL.

Hanging Rock, No. 1 Foundry	$24 00@25 00—4 mos
" No 2, "	23 00@ ....—4 mos
" Mill	22 00@ ....—4 mos
" Soft Silver Gray	21 00@22 00—4 mos
Tennessee, No. 1, Foundry	24 00@ ....—4 mos
Tennessee, No. 2, "	23 00@ ....—4 mos
" Mill	21 00@ ....—4 mos
Missouri, No. 1, Foundry	22 50@ ....—4 mos

STONE COAL.

Ohio, No. 1, Foundry	22 50@ ....—4 mos
" No. 2, "	21 50@22 00—4 mos
" Soft Silver Grey	21 00@21 50—4 mos
Ohio Mill	20 00@21 00—4 mos
Missouri, No. 1 Foundry	25 00@ ....—4 mos
" No. 2, "	24 00@ ....—4 mos
" Mill	22 00@23 00—4 mos

CAR-WHEEL.

Hanging Rock, C. B	40 00@45 00—4 mos
Tennessee "	25 00@32 00—4 mos
Missouri "	30 00@33 00—4 mos
Alabama "	25 00@32 00—4 mos

BLOOMS.

Charcoal	55 00@ 65 00—cash

SCRAP IRON.

Cast	500.@ 85—cash
Wrought	1 00@1 40—cash

Cleveland, Ohio. Feb. 6, 1877.

Specially reported by Messrs. C. E. BINGHAM & Co.

Per gross ton, on four months' time. Subject to change in market. Discount for cash 4 per cent.

FOUNDRY IRON.

No. 1, Lake Superior Charcoal	26 00@....
No. 2, " " "	25 00@....
No. 1, Anthracite	24 00@....
No 2, "	23 00@....
No. 1, Bituminous	24 00@ ..
No. 2, "	22 50@....
American Scotch, No. 1, Cherry Valley	@....
" " B—1, " "	@....
" " No. 2, " "	@....
No. 1, Massillon	25 00@....
B—1, "	23 00@....
No. 2, "	21 50@....

CAR WHEEL AND MALLEABLE IRON.

No. 3 Lake Superior Charcoal	26 50@...
No. 4 " " "	27 00@...
Nos. 5 and 6 "	26 50@...

BESSEMER IRON.

Nos. 1 and 2 Lake Superior Charcoal	26 00@...

FORGE IRON.

No. 1, Gray	21 00@...
White and Mottled	19 50@...

Louisville, Ky. Feb. 6, 1877.

Specially reported by Messrs. GEORGE H. HULL & Co.

The indications still look favorable for an early improvement in trade. There has, however, been no general movement on the part of buyers, and the volume of sales has not been large. Prices remain the same.

The usual time, four months, allowed on quotations below.

HOT BLAST—CHARCOAL.

No. 1 Foundry, from Hanging Rock Ores	$24 00@25 00
No. 2 " " "	22 00@23 00
No. 1, Mill, from " "	20 00@21 00
No. 1, Foundry, from Alabama, Georgia and Tennessee ores	21 00@22 00
No. 2, Foundry, from Ala., Geor'a and Tenn. ores	20 00@21 00
No. 1, Mill, from " " "	20 00@ —

HOT BLAST—STONE COAL AND COKE.

No. 1, Foundry, from Hanging Rock Ores	22 00@23 00
No. 2, " " " "	20 00@21 00
No. 1, Mill, " " " "	19 00@20 00
No. 1, Foundry, from Ala. Ga. and Tenn. Ores.	21 00@22 00
No. 2, " " " "	20 00@21 00
No. 1, Mill, " " " "	20 00@ —
No. 1 Foundry, from Missouri Ores	— @ —
No. 2 " " "	— @ —
No. 1 Mill, from Missouri Ores	23 00@24 00

COLD BLAST—CHARCOAL.

Car Wheel from Hanging Rock Ores	35 00@40 00
" " Tennessee "	26 00@28 00
" " Alabama and Georgia Ores	25 00@35 00
" " Kentucky Ores	25 00@40 00

Milwaukee, Wis. Feb. 6, 1877.

Specially reported by Messrs. R. P. ELMORE & Co.

Lake Superior No. 1 Charcoal	$26 00
" " " 2 "	25 00
Lake Superior No. 1 Anthracite	25 00
" " " 2 "	24 00

Pittsburg, Pa. Feb. 6, 1877.

Specially reported by A. H. CHILDS.

The metal market continues dull and purchases are made chiefly in small lots for immediate use. Low as prices now are, it is claimed by mill owners that pig iron is relatively higher than the manufactured article. Quotations are:

No. 1 Foundry	23 00@24—4 mos
" 2 "	22 00@23 "
Gray Forge	20 00@22 "
White and Mottled	18 00@19 "
Warm blast Charcoal	28 00@29 "
Cold blast Charcoal Western	40 00@45 "

Philadelphia, Pa.

(Weekly report of the Philadelphia Iron Market, furnished by Messrs. JUSTICE, COX, Jr., & Co., Iron Merchants, 333 Walnut Street, Philadelphia. Week ending Feb. 8, 1877.)

PIG IRON.—The demand reported for some weeks continues. The large sales reported for some weeks are being followed by many smaller ones that show a disposition to buy for future consumption. We can say the outlook is good for pig iron as the sales are far exceeding the production, though prices continue at uncommon low rates and some round lots are quoted at even lower prices than we have heard yet. We quote No. 1 $20 to $21; No. 2, $18.50 to $19.50; Gray Forge, $17.50 to $20 as to brand.

MANUFACTURED IRON.—The demand for bars continues, with more call for first-class iron. The cheap Western lots are discarded, the low prices having no effect on buyers unless iron can be guaranteed. The demand for tank continues. Weld and skelp is in less demand than for some time. We quote bars 2 to 2 1-5c. per lb.; tank, 2⅞c. to 7c. per lb. as to brand; skelp, 2¼c. to 2½c. per lb.

MUCK BARS $37 to $39

* NEW RAILS.—The pleasant weather we have been enjoying for some weeks has brought out many inquiries for both steel and iron rails for spring and summer delivery. We quote steel $50 to $52; iron, $36 to $40.

OLD RAILS.—The demand for old rails continues, but only very low prices will bring buyers. We quote $20 to $22 as to lots and delivery.

SCRAP.—There is a good demand for wrought scrap, but with almost all branches of the trade at low prices. We quote wrought $22 to $26; cast, $14 to $19.

Richmond, Va. Feb. 5, 1877.

Specially reported by ASA SNIDER, Esq.

Pig irons unchanged. The market is firm at quotations.

Virginia Cold Blast Charcoal Pig Iron	$27 to $33
" Warm " " "	24 to 28
" " " Coke " " 1 X	23 to 24
" " " " " " 2 X	21 to 22
" " " " " " 3	20 to 21
" Anthracite 1 X	— to —
" " 2 X	— to —
" " 3	— to —

St. Louis, Mo. Feb. 6, 1877.

Specially reported by Messrs. SPOONER & COLLINS, Commission Agents for all kinds of Iron.

We note no particular change in our market, other than a better feeling as to the near future. Those of our foundries that have been idle some time are beginning to start, and prospects are good for a lively trade ere long.

CHARCOAL.		STONE COAL.	
Missouri No. 1 Found'y.	$23@25	Missouri No. 1 Fd'ry.	25@24
" " 2 "	22@23	" " 2 "	..23@23
" Gray Mill	22@23	" Gray Mill	22@26
H. Rock No. 1 Found'y.	25@26	" White & Mt'd	21@22
" " " 2 "	23½@24		
" " Gray Mill	23@24	COLD BLAST CHARCOAL FOR CAR WHEELS.	
Tenn. No. 1 Foundry	23¾@24		
" " 2 "	22¾@23	*All Numbers.*	
" Gray Mill	22½@23	Hanging Rock	35@46
COKE.		Tennessee	30@33
Alice H. R. Ex No. 1 F'y.	26 00	Kentucky	30@33
" " 1 "	25 00	Missouri	28@30
B, " 1 "	24 50	Georgia	28@30
" " 2 "	23 50	Alabama	28@30
Forge	23 50	Assorted Bar Iron	$2 25, rates.
Chat., Tenn. No. 1 Fd'y.	25 00	No. 1 Wrought Scrap	95c. cwt.
" " " 2 "	23 50	Heavy cast	" 70 "
" " Forge	22 50	Light	" 40 "
" " White Mt'd	21 00		

Montreal, Canada. Jan. 30, 1877.

We quote: Pig Iron.—Eglinton and Clyde, $19 50@ 20.00; American $21.00@22.00; Summerlee and Calder $20.75@21.25; Langloan & Gartsherrie $22.00@22.50; Hematite $26.00@27.00. Bar, per 100 lbs., Scotch and Staffordshire $2.00@2.05; best do., $2.20@2.30, Swedes and Norway $4.75@$5.00; Lowmoor and Bowling, $6@ 6.50.—*Monetary Times.*

METALS.

NEW YORK, FRIDAY EVENING, Feb. 9, 1877.

The business in metals is still confined to a jobbing trade, although it is increasing, and there is a better feeling among dealers.

Gold Coin.—During the week under review the price of gold has ranged from 105¼ to 106⅛ and closed at 105⅞.

Bullion.—The markat appears to be in abeyance abroad—awaiting the action here of our Government on on the silver question (what amount is to be declared a legal tender and whether further issues will be authorized) and abroad the action of the Indian Department of the British Government in reference to the manner—whether by loan exclusively, or partly by shipments of silver—they are to meet the large expenditures of $20,000,000 or $30,000,000 on account of the famine. On these two great unknown quantities depend 5 to 10 per cent. of an advance or decline in the value of silver. To-day's quotations are as follows: In London, 57d. ; in this city, 123¼@123⅛; and in San Francisco, 4 per cent. discount.

Copper.—We are reported sales of about 200,000 lb. in lots at 20¼c.@20½c. and 300,000 for delivery up to April at 20½c. The exports to date amount to about 1,500,000 lb., while at the opening of the year it was estimated that our exports previous to the opening of Lake navigation would not amount to more than 2,000,000 lb. The very quiet demand from manufacturers has prevented the anticipated advance in price.

Tin.—Cable quotations are somewhat conflicting, ranging from £72 10/ to £74 10/ for Straits. The market here is quoted in gold as follows: Straits, 17c.; L. & F., 16¾c.; Refined, 17c.; Banca, 19¼c. A small sale of Straits is reported at a lower price than quoted above. The demand is quiet.

Tin Plates are in better demand and prices much firmer, although nominally unchanged. We quote, in gold, per box, as follows: Charcoal tins, $6.62½@6.87½, and ternes, $6.12½@6.37½; coke tins, $6, and ternes, $5.50@5.62½.

Lead.—The sales during the week have been about 100 tons at prices ranging frum 6·22½c. to 6·30c., the latter being the closing price to-day. The stock is very

MINING AND COAL TRANSPORTATION STOCKS.

AMERICAN MINING AND STOCK EXCHANGE.

Name of Company.	Location.	Feet on Vein.	Capital Stock.	a No. of Shares.	Total Assessments Levied.	Date and Amount of Last Assessment per share.	Total Dividends paid.	Date and Amount of Last Dividend per share.	Closing Quotations g American Currency. Sat.	Mon.	Tues.	Wed.	Thurs.	Fri.	Shares sold during the week.
Alpha Cons G. S.	Nevada,	300	$ 3,000,000	30,000	$180,000	Aug. 12, '75, $1.	....	.....	$21 12½	$22 00	$21 00	$23 25	$22 25	$20 37½	2,600
Belcher, G. S.	Nevada,	1,040	10,400,000	104,000	660,400	April 14, '71, $1.	$15,397,200	April 10, '76, $1.	8 62½	9 00	9 00	9 50	9 50	8 87½	1,850
Bertha Gold Co.	Virgi'a.	645 acs.	300,000	30,000	**	.....	....	.....	8 50	8 25	8 00	8 25	8 25	8 37½	4,710
Best and Belcher, G. S.	Nevada,	545	10,080 000	100,800	136,192	July 13, '74, 50c.	....	.....	36 00	36 50	37 50	39 50	38 co	38 00	1,850
Bullion, G. S.	Nevada,	943½	10,000,000	100,000	2,202,000	Jan. 15, '77, $1.50.	....	.....	17 50	18 25	17 75	17 00	13 87½	....	1,200
Caledonia, G. S.	Nevada,	2,188	10,000,000	100,000	1,210,000	Aug. 28, '76, $1.	....	.....	10 62½	8 25	....	10 87½	....	10 12½	1,450
California, G. S.	Nevada,	600	54,000,000	540,000	....	.....	9,720,000	Jan. 15, '77, $2.	48 75	49 87½	50 87½	52 50	52 25	51 87½	1,620
Centennial, G.	Califor.	66 acres	1,000,000	100,000b	....	.....	....	.....	...	....	....	....	....	....	....
Chollar Potosi, G. S.	Nevada,	1,400	2,800,000	28,000	1,282,000	June 26, '76, $5.	3,080,000	Feb. 10, '72, $1.	72 50	....	73 12½	....	74 00	....	1,200
Cleveland, G.	Colo.	3,715	250,000	25,000b	**	.....	....	.....	9 75	9 87½	9 87½	9 75	9 50	9 75	4,600
Cons. Hercules & Roe, S	Colo.	16,500	1,000,000	100,000	**	.....	120,000	.....	....	....	....	....	....	....	.....
Cons. Imperial, G. S.	Nevada,	468	50,000,000	500,000	125 000	July 25, '76, 25c.	....	.....	2 50	2 37½	....	2 25	....	....	1,200
Con N. Slope & E.C.T.	Colo.	15,000	500,000	10,000	**	.....	....	.....	16 37½	15 75	....	....	16 00	....	700
Cons. Virginia, G. S.	Nevada,	710	54,000,000	540,000	411,200	June 11, '73, $3.	25,920,000	Dec. 11, '76, $2.	51 62½	52 87½	53 00	55 12½	57 co	56 25	1,115
Confidence, G. S.	Nevada,	130	2,496,000	24,960	243,840	March 18, '73, $1.	78,000	May 1, '05, $8.33½	....	9 50	9 37½	11 00	10 12½	....	700
Crown Point, G. S.	Nevada,	600	10,000,000	100,000	1,273,370	Jan. 10, '77, $1.	11,588,000	Jan. 12, '75, $2.	8 87½	8 37½	9 75	9 00	9 62½	9 00	2,000
Douglas Mining Co.	Colo.	21,000	1,000,000	10,000	**	.....	....	.....	....	....	....	....	....	....	.....
Eureka Cons. G. S. L.	Nevada,	..	5,000,000	50,000	100,000	May 26, '76, $1.	1,000,000	Aug. 5, '75, $1.	22 co	....	....	21 87½	22 25	....	320
Exchequer, G. S.	Nevada,	400	10,000,000	100,000	280,000	Sept. 23, '76, $1.	....	.....	8 50	7 50	7 75	7 62½	7 37½	....	850
Gould and Curry, G. S.	Nevada,	621	10,800,000	108,000	2,134,000	Jan. 23, '77, $1.	3,934,800	Oct. 10, '70, $10.	13 12½	13 75	12 75	14 50	13 87½	13 50	3,050
Grant, G. S.	Nevada,	1,000	10,000,000	100,000	....	.....	....	.....	4 62½	4 50	....	2 25	1 75	2 00	2,800
Granville Gold Co.	N. Car.	9,000	1,000,000	100,000	**	.....	....	.....	3 37½	3 37½	3 00	3 00	3 00	2 87½	5,000
Hale & Norcross, G. S.	Nevada,	400	11 200,000	112,000	2,334,000	Jan. 22, '77, $1.	1,598,000	April 10, '71, $5.	6 25	6 00	....	6 25	6 12½	....	675
Hukill, S.	Colo.	3,283	1,000,000	10,000	**	.....	20,000	Nov. 1, '76, $1	....	....	....	....	....	....	.....
Indian Queen, S.	Nevada,	1,000	3 000,000	60,000	....	.....	60,000	.....	....	....	....	....	....	....	.....
Julia Cons. G. S.	Nevada,	3,000	11,000,000	110,000	220,000	Jan. 4, '77, $1.	....	.....	....	....	....	....	....	....	.....
Justice, G. S.	Nevada,	2,100	10,500,000	105,000	1,502,500	Sept. 14, '76, $5.	....	.....	15 50	15 50	15 co	....	12 50	12 00	1,900
Kentuck, G. S.	Nevada,	95	3,000,000	30,000	270,000	Dec. 3, '74, $1.	1,252,000	March 8, '70, $5.	8 50	....	8 75	....	....	....	400
Kossuth, G. S.	Nevada,	2,700	5,400,000	108,0000	405,000	Aug. 15, '76, 50c.	....	.....	1 12½	....	1 12½	1 12½	....	....	800
Leopard, G. S.	Nevada,	1,500	5,000,000	50,000	50,000	March 31, '76, $1.	162,500	Dec. 15, '76, 50c.	....	....	4 75	....	7 00	....	200
Lucerne Mining Co.	Colo.	4,200	5,000,000	500,000	**	.....	....	.....	1 62½	1 87½	1 87½	1 75	1 87½	1 75	6,600
Mer. and Min. Tun. Co.	Colo.	30,000	500,000	50,000	**	.....	....	.....	....	....	....	....	....	....	.....
Merrimac, S.	Mass.	1,500	500,000	50,000b	**	.....	65,000	Jan. 10, '77, $1.	5 50	5 75	5 75	5 75	6 12½	6 12½	7,555
Mexican, G. S.	Nevada,	600	10,080,000	100,800	100,800	Sept. 5, '76, 50c.	....	.....	....	18 12½	19 00	18 87½	19 50	18 75	1,450
Morning Star.	Nevada,	1,600	8,000,000	80,000	....	.....	....	.....	....	....	....	....	....	....	.....
Northern Belle, S.	Nevada,	1,600	5,000,000	50,000	....	.....	1,000,000	Jan. 15, '77, $1.	28 75	....	....	29 co	....	29 00	400
Ophir, G. S.	Nevada,	675	10,080,000	100,800	2,034,400	May 14, '75, $2.	1,394,400	March 9, '64, $4.	27 17½	....	28 62½	29 75	28 25	26 87½	1,750
Original Comstock, G. S.	Nevada,	....	10,000,000	10,000	....	.....	....	.....	1 12½	....	....	....	....	....	100
Overman, G. S.	Nevada,	1,200	3,840,000	38,400b	2,222,280	Oct. 21, '76, $3.	....	.....	99 75	100 00	104 00	103 75	102 75	102 00	1800
Pleasant View	Colo.	1,200	200,000	20,000	**	.....	....	.....	....	....	....	....	....	....	.....
Raymond and Ely, G. S.	Nevada,	5,000	3,000,000	30,000	540,000	Dec. 5, '76, $1.	3,075,000	Sept. 10, '73, $3.	6 00	6 12½	5 75	5 62½	5 50	5 12½	1500
St. Joseph Lead Co.	Missou.	2600 acs.	1,000,000	100,000	....	.....	210,000	.....	....	....	6 50	....	....	6 50	1200
Santiago, G. S.	Nevada,	2,000	11,200,000	112,000	....	.....	....	.....	....	....	....	....	....	....	.....
Savage, G. S.	Nevada,	800	11,200,000	112,000	2,070,000	Jan. 27, '77, $1.	4,460,000	June 11, '69, $3.	9 37½	8 62½	8 87½	8 87½	9 12½	8 12½	3,800
Seg. Belcher, G. S.	Nevada,	160	640,000	6,400	244,800	April 11, '76, $5.	....	.....	68 00	68 00	65 75	63 37½	71 12½	64 50	820
Sierra Nevada, G. S.	Nevada,	3,630	10,000,000	100,000	1,500,000	Oct. 24, '76, $1.	102,500	Jan. 16, '71, $1.	8 75	8 87½	8 75	9 25	9 50	....	1,250
Silver City, G. S.	Nevada,	3,900	6,310,000	63,100	15,775	Nov. 16, '76, 25c.	....	.....	....	....	....	....	....	....	.....
Silver Hill, G. S.	Nevada,	5,400	10,800,000	108,000	810,000	Sept. 18, '76, $1.	....	.....	8 25	8 25	....	....	7 12½	7 50	1,600
South Comstock, G. S.	Nevada,	1,500	10,000,000	100,000	44,000	May 3, '76, 10c.	....	.....	....	....	....	....	....	....	.....
South. California, G. S	Nevada	1,500	5,000,000	50,000	....	.....	....	.....	....	....	....	....	....	....	.....
Southern Star, G. S.	Nevada,	1,500	6,000,000	600,000	....	.....	....	.....	....	....	....	....	....	....	.....
Trenton, G. S.	Nevada,	..	10,000,000	100,000	....	.....	....	.....	....	....	....	....	....	....	.....
Union Cons. G. S.	Nevada,	850	10,000,000	100,000	260,000	March 3, '76, $1.	....	.....	10 00	10 00	....	....	10 75	10 25	1,300
West Belcher, G. S.	Nevada,	1,000	10,000,000	100,000	....	.....	....	.....	....	....	....	....	....	....	.....
Yellow Jacket, G. S.	Nevada,	1,200	12,000,000	120,000	2,718,000	Oct. 28, '76, $1.	2,184,000	Aug. 10, '71, $2.50.	16 50	16 62½	17 00	17 00	16 62½	15 50	4,600
Young America, S.	Nevada,	1,000	3,000,000	30,000	6,000	Oct. 23, '76, 20c.	....	.....	....	....	....	....	....	....	.....
			Assessments levied to date, $23,495,557		Div'ds pd. to date, $86,421,400								Total sales		79,015

BOSTON STOCK MARKET.

									Fri.	Sat.	Mon.	Tues.	Wed.	Thurs.	
Allouez, C.	Mich.	..	$1,000,000	20 000	$940,000	May 9, '76, $5.	....	.....	$5 00	5 25	5 12½	5 25	5 12½	5 co	.....
Calumet and Hecla, C.	Mich.	2¾ mile	2,000,000	80,000f	1,200,000	.....	$11,050,000	Nov. 15, '76, $5.	176 25	177 00	181 25	184 00	189 75	187 co	.....
Central, C.	Mich.	..	500,000	20,000c	100,000	June, '62, 65c.	1,020,000	Feb. 17, '76, $5.	31 00	31 12½	31 25	31 12½	31 25	32 12½	.....
Copper Falls, C.	Mich.	..	1,000,000	20,000d	535,000	May 10, '76.	100,000	Nov., '71, $1.	3 12½	3 12½	3 25	3 50	3 75	3 75	.....
Dana, C.	Mich.	..	500,000	20,000d	68,020	Jan., '73, 50c.	....	.....	10	10	10	10	10	10	.....
Dawson, S.	Canada.	..	1,200,000	60,000f	....	.....	....	.....	13	14	15	15	15	15	.....
Duncan, S.	Canada.	..	1,200,000	60,000f	75,000	July, '76, 41⅔.	....	.....	5 12½	5 37½	5 25	5 56¼	5 75	6 co	.....
Franklin, C.	Mich.	..	500,000	20,000d	360,000	June, '68, $5.	585,000	Nov., '71, $1.	14 75	14 62½	14 75	14 62½	14 50	14 50	.....
Humboldt, C.	Mich.	..	500,000	20,000d	100,000	Sept. 28, '76, 15c.	....	.....	18	18½	19	20	20	20	.....
International, S.	Canada.	..	1,200,000	60,000f	....	.....	....	.....	62½	62½	56¼	56¼	50	56¼	.....
Madison, C.	Mich.	..	500,000	20,000d	123,000	Sept. 11, '74, 10c.	....	.....	25	25	25	25	25	25	.....
Mesnard, C.	Mich.	..	500,000	20,000d	160,000	April 12, '65, 50c.	....	.....	62½	62½	65	70	62	65	.....
Minesota, C.	Mich.	..	1,000,000	20,000c	436,000	June 10, '69, $1.	1,820,000	Mch. 15, '76, 50c.	1 37½	1 37½	1 25	1 37½	1 25	1 37½	.....
National, C.	Mich.	..	500,000	20,000e	105,000	Oct., '75, $1.	360,000	Oct., '73, $1.	1 25	1 31¼	1 37½	1 37½	1 37½	1 37½	.....
Osceola, C.	Mich.	..	1,000,000	40,000d	880,000	May 1, '76, $2.	....	.....	25 co	25 50	26 co	28 00	27 co	27 co	.....
Petherick, C.	Mich.	..	500,000	20,000d	165,533	March 22, '76, 50c.	....	.....	40	40	42	45	45	40	.....
Pewabic, C.	Mich.	..	500,000	20,000d	185,000	June, '68, $3.	460,000	July, '73, $1.	3 25	3 31¼	3 25	3 37½	3 37½	3 25	.....
Phœnix, C.	Mich.	..	1,000,000	20,000d	817,500	Sept., '70, $3.	20,000	Jan. 20, '76, $1.	....	....	....	....	....	....	.....
Quincy, C.	Mich.	..	200,000	20,000h	....	.....	2,050,000	Oct. 28, '76, $3.	44 co	43 75	43 50	43 75	43 87½	43 37½	.....
Ridge, C.	Mich.	..	500,000	20,000d	200,000	.....	90,000	Feb. 8, '75, $1.	4 50	4 62½	4 62½	4 62½	4 62½	5 00	.....
Rockland, C.	Mich.	..	500,000	20,000d	495,000	Jan., '74, $1.	....	.....	26	25	25	24	25	25	.....
Star, C.	Mich.	..	500,000	20,000d	265,000	March 30, '76, 50c.	....	.....	35	35	35	33	33	33	.....
Superior C.	Mich.	..	500,000	20,000d	340,000	March, '74, 25c.	....	.....	10	10	10	10	10	10	.....
			Assessments levied to date, $7,640,033		Div'ds paid to date, $17,555,000								Total sales ..... —— shares		

COAL TRANSPORTATION STOCKS.—(New York and Philadelphia.)

	Amount of Capital Stock.	No. of shares of stock issued.	Date, percentage and amount of last dividend.		Sat.	Mon.	Tues.	Wed.	Thurs.	Fri.	
Consolidation Coal Co.	10,250,000	102,500	Dec. 6, '76, 2½ per cent...	$256,250	30	....	30	30	30	....	400
Delaware and Hudson Canal Co.	20,000,000	200,000	Aug. 1, '76, 4 per cent.....	800,000	61¼	59½	58	58½	54	....	13,297
Delaware, Lackawanna and Western RR. Co.	25,880,000	519,780 c	April 20, '76, 2½ per cent.	647,230	69½	70	69⅝	68¼	69⅛	68¼	115,480
Lehigh Coal and Navigation Co.	10,248,550	204,971 c	June 3, '76, $1 per share.		57⅛	57¾	56	56⅛	57¼	55¾	9,042
Lehigh Valley RR. Co.	27,042,900	540,858 c	Jan. 15, '77, 2 per cent....	540,858	94¼	95⅛	94⅝	92¼	92¼	93	2,508
Maryland Coal Co.	4,400,000	44,000	Jan. 31, '76, $1.50 per share.		....	....	....	....	....	....	.....
New Jersey Central RR. Co.	20,020,000	200,000	Jan. 21, '76, 2½ per cent...	500,000	26⅜	27¼	26⅜	23⅜	21⅝	19⅛	98,510
Pennsylvania Coal Co.	5,000,000	100,000 c	.....		....	....	....	....	....	....	.....
Pennsylvania RR. Co.	68,870,200	1,377,374 c	Nov. 26, '76, 2½ per cent..	$1,377,404	92¾	92½	90¼	91¼	91¾	91	65,458
Philadelphia and Reading RR. Co.	34,277,575	685,551 c	.....		29¼	30⅛	28	27½	28	26½	71,474
										Total	376,109

G. Gold. S. Silver. L. Lead. C. Copper. a The par value of shares is $100, unless otherwise designated. b Par value $10. c Par value $50. d Par value $25 each. e Par value $15. Par value $20. g Closing quotations represent the latest prices bid. Prices asked will have a * affixed. h Full paid. i On the four old companies. *Ex-dividend.

light and were a purchase of 200 tons to be made the price would probably advance to 6.40c., at which figure considerable of the lead is now held.

The San Francisco *Commercial Herald* of Feb 1 says:—The total production of Pig lead of the Pacific Coast, so far as it passes through San Francisco, was 10,443 tons for 1876. Of this amount there was shipped to New York 8,008 tons; consumed here 2,035 tons; stock on hand, 400 tons. The above includes what was produced by the Shelby Company, the Richmond Company, and the Sacramento and Oakland smelting works. From present indications it would seem that the Lead production this present year (1877) will be considerably increased, as the mines in Inyo County are turning out better than ever before. Arizona also is opening up some new mines, and the Eureka Consolidated Company has recently struck a large ore body. The Granada carries ea route to New York via Panama 380,000 lbs Pig lead.

Spelter and Zinc.—Domestic spelter is quoted very firm at 6¼c. currency. The market is in such a condition that the price is only held down by probabilities of importations at a figure but little above that now asked for the domestic article. Sheet zinc is in fair demand at 7¾c. currency for domestic.

Antimony.—This article is quiet at 13c.@13½c. gold.

Quicksilver.—The price in this city is unsettled. Owing to the dissolution of the Combination in San Francisco the price there has receded to 45c.@47½c. per lb. In London the quotation is £8 per flask.

The San Francisco *Commercial Herald* of Feb. 1, says: The combination which has existed here for a few months past has been dissolved by mutual consent. The price agreed upon was too high for London competition, causing us to lose the Hongkong trade. At date the price is weak at 47½c; in fact we think round lots could now be bought at 45c. The outgoing steamer for China and Japan will carry 1,000 flasks or more upon consignment, besides other lots bought at prices within our

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range. The market at this date seems to be in an unsettled condition.

THE SALT LAKE CITY ORE & METAL MARKET.

Telegraphic advices from Salt Lake City, dated Feb. 7, 1877, give the following prices for base bullion, and argentiferous lead ores:

Argentiferous Lead (Base Bullion).—$72 per ton for lead. $1.25 per ounce for silver. $20 per ounce for gold. The quotation for silver is based upon the silver contents in the lead of 80 to 120 ounces per ton of 2,000 lb.

Argentiferous Lead Ores.—From $1.00 to $1.10 per ounce for the silver contained therein, based upon a standard of 32 per cent. lead, each unit above 32 per cent. 50 cents per unit added. And 75 cents per unit over 50 per cent.

FINANCIAL.

New York Stocks.

NEW YORK, FRIDAY EVENING, Feb. 9, 1877.

Speculators believing that the early market value of all of the coal stocks depends greatly upon the turn that may be taken in the affairs of the New Jersey Central Railroad Company, have been loath to operate extensively, previous to some decided action being taken by that company, and as a consequence, the business of the week aggregates over 100,000 shares less than last week. The feeling that this road must soon go into the hands of a receiver is steadily growing, having a weakening effect on all of the stocks.

New Jersey Central Railroad Company.—Nearly 100,000 shares of this stock have changed hands during the week at from 27¼ to 19⅛ per cent, the latter price being the final quotation. This is the lowest price at which this stock has ever sold, and is a decline of nearly 100 per cent. against the quotation of a year ago, when it was quoted at 117. The closing quotations for the bonds of this company were as follows: First Consolidated (sales) 72 against 74½@77 yesterday; the convertibles 65@67⅛, against 71¼@73 yesterday; Lehigh and Wilkes Barre bonds 49¾@50, against 51 (sales) yesterday. All the securities of the company were depressed by rumors that a receiver is soon to be appointed for the Company.

Delaware, Lackawanna and Western Railroad Company. This stock closes lower; 70 and 68¼ per cent. are the extreme prices for the week. The final quotation shows but a slight recovery from the lower figure. Sales amount to 15,500 shares.

Delaware and Hudson Canal Company.—This stock closes at 54 per cent., the lowest quotation of the week, and the lowest price it has been for years. Sales aggregate over 13,000 shares.

Maryland Coal Company.—At the annual meeting of this company, the following officers were elected to serve for the ensuing year: President—Henry Loveridge. Directors—Cuester W. Chapin, George L. Kingsland, Ludlow Patton, Henry M. Alexander, Francis Robinson, Reuben Manley, George A. Elliott, Henry Loveridge, David Milliken, George W. Butts.

The Montreal, Canada, Rolling Mills Company has declared a semi-annual dividend of 4 per cent. from its earnings for the last six months of the past year.

The Bellfont, Ky., Iron Works Company has declared a dividend of 5 per cent.

Hudson River Spathic Iron Ore Company.—The annual meeting of this company will be held on the 20th inst.

Miscellaneous Sales and Quotations.

Sales and quotations of the stocks and bonds dealt in here and at Philadelphia during the past week, are given in the following tables. The Philadelphia quotations will have a * affixed.

STOCKS.

	Closing quotations. Highest.	Lowest.	Sales. Shares.
*Cambria Iron Co	15	—	44
*Pennsylvania Salt Manufact. Co	66	70	—
*Westmoreland Coal Co	78½	85	—
*Buck Mountain Coal Co	35	—	—
*Saltsburg Coal Co	90	—	1,000
Pennsylvania Coal Co	215	—	5
Maryland Coal Co.	10½	—	100
*Nesquehoning V. RR	51½	—	67
Mariposa L. & M. Co., Pref.	4⅜	—	—
" " " " Common	4¾	—	—
Quicksilver Mining Co., Pref.	21	—	—
" " " Common	14	—	—

BONDS.

Central of N. Jersey, 1st mtge., New	105	103	50,000
" " " 1st Consolidated	76½	—	11,000
" " " Convertible	74½	70½	24,500
L. & W.-B. Coal Co., Consolidated	56	50	18,000
Del. & Hud. Canal, 1st mtge., 1884	100	—	6,000
" " " reg., 1891	101	100	12,000
*L. V. RR., Consolidated mtge., 6s, 1923	98¼	98	3,500
*Penn. RR., gen. mtge., Con., 1910	108	—	4,000
" " Con. mtge., 6s, reg	99⅞	99¾	4,000
*P. & R. RR., New Con. 7s	50	50	42,000
" " " 6s, 1843-44, & 1849-80	100½	—	9,000
" " " Con. mtge. 7s, reg	90¼	90	31,000
" " " Con. mtge. 7s, coupons	92	90	16,000
*Lehigh Coal & Nav. Co., 6s, 1884	105	—	2,422
" " " RR., 1897	104½	104	4,700
" " " Conv. gold, 1897	97¾	96½	14,530
*Penn. and N. Y. Canal, 7s	—	—	31,000
*East Penn. Iron Co., 1st mtge. 7s	40	—	1,000
*Penn. Canal	70	—	3,000
St. Louis, I. M. & S., 1st mtge	93½	93	42,000

Philadelphia Stocks.

PHILADELPHIA, Thursday Evening, Feb. 9, 1877.

The quotations of coal shares at Philadelphia are fairly maintained, quite contrary to the New York market which is very weak and declining. No doubt everything is done which is possible to sustain the coal stocks and the rumors of even a meeting of parties favorable to a Combination is construed into a probability of something being accomplished in that direction.

Reading Railroad.—This stock has ranged between 15¼ and 13, closing at 13¼, a decline equal to one per cent. The transactions aggregate 71,000 shares. The $10,000,000 general mortgage 6 per cent. bonds of the Philadelphia and Reading Railroad Company were selling in London on the 6th inst at 56¼ (the information coming from foreign bankers) against 58 on Saturday. These bonds were marked in London at 93½ in January, 1876 The closing price 13¼ for $50 shares would make the price of the stock 26½ per cent. against 56¼ per cent. for the general mortgage bonds as quoted in London on the 6th inst.

Lehigh Coal and Navigation Co.—About 9,000 shares of this stock have changed hands at from 27⅞ to 28¾ closing at 27⅞. The stand taken by the president of this company in insisting upon a cancellation of the lease, or the compliance on the part of the New Jersey Central company with its requirements, meet with the approbation of the stockholders. The simple truth is the stockholders of the Lehigh Navigation Company have been compelled to forego dividends for three quarterly periods, not because money was not earned, but because the Central has not paid up under terms of the lease.

Pennsylvania Railroad Co. 65,000 shares of this stock have changed hands at from 45⅛ to 46⅜ closing at 45⅛ decline equal to 1⅛ per cent.

Lehigh Valley Railroad.—This closes at 93 per cent. showing a decline equal to ¾ per cent., the sales have amounted to 2,500 shares. It is stated that this company purposes building a large addition to its construction and repair shops at Easton Pa. in the spring.

Locust Mountain Coal and Iron Company.—The annual meeting of this company will be held on the 26th inst.

Allentown Iron Company.—The annual meeting of this company will be held on the 20th inst.

Volcanic Oil and Coal Company.—This company will hold its annual meeting on the 13th inst.

The Shafton Coal Company will hold its annual meeting on the 12th inst.

The Bear Ridge Company will hold its annual meeting on the 14th inst.

The Excelsior Coal Mining Company will hold its annual meeting on the 14th inst.

Highland, Pa., Coal Company.—The annual meeting of this company will be held on the 14th inst.

AUCTION SALES OF STOCKS AND BONDS during the week have been as follows:

Westmoreland Coal Company.—12 shares at $82 per shares.

North Pennsylvania Railroad Company.—$8,000 of the 1st mortgage 6 per cent. bonds, at 107¼ per cent.

Delaware and Raritan Canal, and Camden and Amboy Railroad and Transportation Company.—$2,500 6 per cent. bonds at 104¼ to 104½ per cent., also $1,000 of the 6 per cent. bonds due in 1889 at 108 per cent.

Chesapeake and Delaware Canal Company.—$1,200 6 per cent. bonds at 82½ per cent.

Shafton Coal Company—150 shares at $20 per share.

The Fulton Coal Company announces a dividend of 4 per cent., payable on demand.

The Locust Gap Mountain Improvement Company announces a dividend of 4per cent., payable on demand.

Gold and Silver Stocks.

AMERICAN MINING AND STOCK EXCHANGE.

NEW YORK, FRIDAY EVENING, Feb. 9, 1877.

The better class of mining stocks continues to show quite an improvement in the quotations, and the outlook is considered very promising with all of the producing mines.

We note an encouraging feature in the sudden decline in the Grant stock. Our readers will remember that we indicated the disreputable manner in which this stock was manipulated on the American Mining and Stock Exchange, and on the baselessness of its nominal quotations. It has fallen from over 8 to about 2, and will probably find its true level in the vicinity of zero soon.

The Mariposa Land and Mining Company has levied an assessment of $1 per share on the common and preferred stock, payable on the 17th inst.

The Arcadian Copper Company has levied an assessment of $1 per share payable on the 20th inst.

The Northern Belle Mining Company paid its twentieth dividend on the 15th ultimo. During the two years the mine has been worked it has netted $1,300,000, or at least so it is reported. It is now claimed that the February dividend will be increased to $1.50, leaving a surplus on hand.

Mocupia and New York Mining Company.- The annual meeting of this company will be held on the 21st inst.

Eagle Gold Mining Company.—7,334 shares of this stock were sold at auction in Philadelphia during the week at $5.50 for the lot.

Copper Stocks.

Specially reported by Messrs. WILSON W. FAY & Co., Bankers and Brokers, Room 7 Traveller Building, 31 State Street, Boston.

BOSTON, THURSDAY EVENING, Feb. 8, 1877.

The market on copper stocks shows a firmer feeling. Calumet has made an advance of 13¼ dollars per share, selling on the 7th at 190; this is with the dividend of $5 per share off. As the dividend is not payable until the 15th the stock really stands at 195. The stock closes offered at 188, a very natural reaction, in fact it would have been very unnatural if it had not felt it to some extent. Central is also in better demand at an advance of two points, and very little stock finds its way on the market. Copper Falls is firmer at 3¼ bid. With any degree of speculation on the street, Copper Falls would undoubtedly take a leading position in stocks of its class. Duncan was very quiet the first part of the week, but is since in demand again, 6 being freely bid for it this P. M. The company is said to have struck the rock from which "Silver Islet" took out its richest silver in its palmy days, whether this is the fact or not, we do not know, but evidently there are parties who believe it, judging from the advance of the stock. Humboldt is in demand at .20, "all you want to sell." The party or *parties* who quietly bought the 16,000 shares sold for non-payment of assessment, evidently intend when the right time comes, to make the Humboldt worth more than it is to-day. Quincy is very steady at $44. We expect to see some movement in this before long, either one way or the other, but probably up. Ridge is in demand, this P.M. at $5, and National copper, 1¼. Others quiet.

Gas Stocks.

NEW YORK, FRIDAY EVENING, Feb. 9, 1877.

Gas stocks are very dull and without feature. The announcement in our last issue with reference to the dividend declared by the Harlem Gas Company should read 4, instead of 5 per cent.

Gas in Moncton, N. B.—This place is to have a new gas works.

The Chicago Gas Supply.—An ordinance has been presented to the Chicago Common Council, for the erection of gas works, which was referred to the Gas Committee. The ordinance grants the franchise to any company or companies, provided the works be erected and the mains laid by them, and a bond given in the penal sum of $500,000. to save the city form all damage.

San Francisco Gas Company.—We note recent sales of some 1,500 shares of the stock of this company at from $110 to $113 per share.

St. Louis Gas Light Company.—The final decree of the Circuit Court in the case of the city again t the St. Louis Gas Light Company was passed on the 5th inst. It awards the city judgment of $207 000 agaiost the company, extinguishes the debt of $80,000 which the company claims from the city for gas furnished for three years, and which the city has refused to pay, and gives to the city all the works and property of the company. It also orders that the p operty shall remain in the hands of the receiver until the Supreme Court has given a decision in the case and the decision of the Circuit Court is affirmed. The city will be entitled to all the proceeds remaining in the hands of the receiver since June, 1876. The case will be appealed to the Supreme Court.

The Camden, N. J., Gas Question.—The city council appointed a committee to go to Trenton to protest against a renewal of the charter of the Camden Gaslight Company. The committee went to Trenton and found in existence a statute renewing for fifty years the charter of any company applying for such renewal.

Harrisburg, Pa., Gas Works.—This city has a new gas company and new works have been erected, the gas to be made under the Lowe patent.

Northern Liberties Gas Company.—110 shares of the stock of this company was sold at auction in Philadelphia during the week at $43 per share.

The following list of Companies in New York and vicinity are corrected weekly by GEORGE H. PRENTISS, Broker and Dealer in Gas Stocks, No. 30 Broad st., N. Y.

Companies in New York and Vicinity	Cap. Stk.	Par.	last Divid.	When Paid.	Bid.	Askd.
			pr.c			
Mutual, N. Y.	$5,000,000	$ 100	2½	Jan. '77	100	102½
" " Bonds	90,000	1,000	†3½	Feb. '77		109
NewYork, "	4,000,000		5	Nov. '76	133	135
Metropol. "	2,500,000	100	5	Sep. '76	140	145
" " Certf.	1,000,000	....	3½	" "	101	103
" " Bonds	500,000	1,000	3½	Dec. "		102½
Harlem "	1.850,000	50	4	Feb. '77	104	—
Manhattan"	4,000,000	50	10	Dec. "	233	235
Brooklyn, B'klyn	2,000,000	25	5	Nov. '76	170	172½
Nassau "	1,000,000	25	4	Jan. '76	80	—
" " Certf.	700,000	1,000	3½	Nov. '76	95	—
People's "	1,000,000	10	3½	Jan. '76	46	52½
" " Certf.	300,000	1,000	3½	July '76	84	90
" " Bds	325,000	....	3	Feb. '77	90	96
Metropol. "	1,000,000	10	3½	Nov. '76	76	80
Wmsburgh "	1,000,000	50	3	Oct. '76	130	—
" " Certf.	1,000,000	....	3½	July "	100	101
Citizen's "	1,200,000	20	2½	Jan. '76	99	102
" " Certf.	320,000	1,000	3½	Oct. "	98	102
J. C. N.J.	750,000	20	5	July, '75	160	—
Centl. Westch. N.Y.	466,000	50	4	July, "	90	—
Subur'n " "	390,000	50				90

† Gold.

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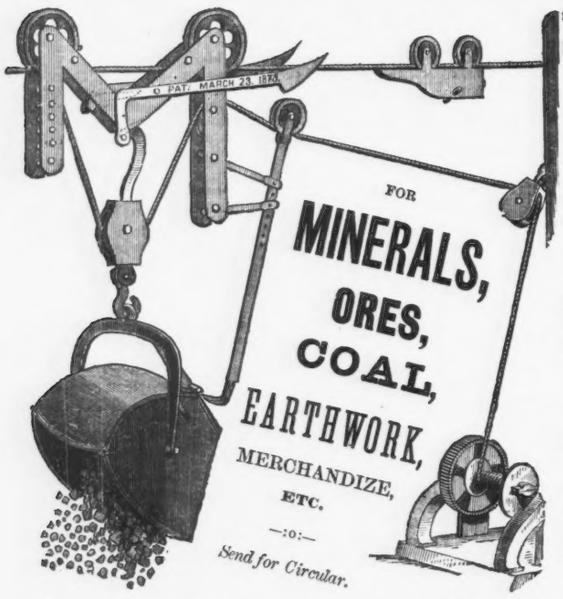

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